

RURAL - URBAN

Population Change and Migration

IN OHIO 1940 - 1950



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**OHIO AGRICULTURAL
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# **RURAL-URBAN POPULATION CHANGE AND MIGRATION IN OHIO 1940-1950**

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## **INTRODUCTION**

The question of what is happening to the population of Ohio is one whose answer appears to have important implications for everyone interested in the changes which affect the agricultural, industrial, institutional, and cultural life of the people in the state.

From an analysis of population data made available by the United States Census Bureau and the National Office of Vital Statistics, we have been able to examine the redistribution of the population in Ohio for the decade 1940-1950 by counties and by economics areas. It has been possible to determine the inequalities of population change, such as those differentials between urban and rural births and deaths, and metropolitan and non-metropolitan migration.

These data have provided us with an opportunity to explore further the roles which natural increase and migration played in the changes which occurred in the state during the ten year period. The result has been that we have come closer to a better understanding of some of the factors involved in the movement of rural and urban people and the processes of urbanization and suburbanization. This kind of knowledge is of inestimable value to those who are planning for land use, personal and business services, schools, youth organizations, churches, industrial development, political representation, health and welfare administration, taxation, and numerous other social institutions.

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## A SUMMARY OF THE FINDINGS

This publication gives a detailed description of some of the significant changes in Ohio's population during the period from 1940 to 1950. It includes some of the main trends that are indicated and points out the important factors as they appear from the data available. The outlook for the future is also discussed.

The increase in population for Ohio did not result in a more equal distribution of the population throughout the state. On the whole the already populous areas gained; the less densely populated areas lost or gained little. The increase in the metropolitan areas over the 1940 population was 18.2 percent; the increase for non-metropolitan areas, 10.0 percent. Decreases occurred in the more rural southern and eastern counties and in some northwestern counties.

Largest proportionate increases were experienced near large centers by the rural population of the state. Over-all rural gains were 20.7 percent compared with a gain of 12.2 percent in the urban population. This is not contradictory to the above statements since it was only the rural population located in or near-by the large metropolitan areas which made important gains. Actually the non-metropolitan rural population had a slight loss.

The spectacular rise in the crude birth rates during the decade from 16.6 per 1000 population in 1940 to 23.7 per 1000 population in 1949, may be attributed as being the main factor in the population increase in Ohio during the decade.

Crude urban birth rates increased faster than crude rural birth rates. The crude rates in 1940 were only one-tenth apart, 16.6 urban and 16.5 rural. By 1950 the crude urban and rural birth rates exhibited a difference of 3.9 percent, the urban rate being higher. Birth rates **standardized** for age and sex composition of the two populations demonstrate that urban rates in 1950 were practically equal to rural rates, being 23.8 for urban and 24.0 for rural. In 1940 standardized rural rates were substantially higher, being 15.4 for urban and 19.5 for rural.

There was an absence of any marked change in death rates, except that the rural and metropolitan rates were slightly reduced.

In addition to gaining population by means of a high birth rate and a low death rate, Ohio found itself in a position of maintaining its attraction for people of other states as is seen in the influx of 243,470 people from outside the state.

Within the state, the increased employment opportunities of the industrial centers in Ohio was evident by the movement of agricultural workers, farm families, and non-farm residents from the more extremely

rural counties. In Ohio, however, where large cities have been growing rapidly for the past 50 years, the pattern of intra-state migration, or the movement of people from one place to another within the state, appears to be related to the accelerated suburbanization surrounding the metropolitan centers. Large rural increases were experienced in the metropolitan areas. Metropolitan areas had a 34.3 percent increase in rural population due to migration, as compared to a 1.5 percent loss in rural population in the non-metropolitan areas.

Of the factors associated with intra-state migration, increased employment opportunities in large industrial centers would appear to be one of the most significant. Concurrent with this development, however, increased mechanization of farms, reduction in the number of families operating farms, and a marked decrease in the use of hired labor on farms were undoubtedly important factors in migration to the more industrial counties of Ohio.

The population picture for Ohio in the next decade is one of continued growth. Predictions are made on the basis of three categories, low, medium and high. Predictions for Ohio's population is a low of 8,508,000 and a high of 9,487,000 in 1960. In accordance with the medium projection of 169.4 million for the United States by 1960, and assuming the over-all trend in birth and death rates, the medium projection for Ohio's population is estimated to be 8,913,000.

#### **PROCEDURES IN THE DEVELOPMENT OF THE DATA**

From the census data we observe that Ohio's population increased during the decade by 1,039,015 persons, which represents a 15 percent increase over the preceding decade. Since the natural increase during that period was 795,545, the remaining 243,470 persons were gained through migration into the state. This number indicates only the difference between the actual increase and the natural increase. The latter is the surplus of live births over deaths in the population. From such figures we are in no position to determine the interchange of individuals between Ohio and other states in the country. Moreover, we do not describe the patterns of inter-state migration. The extent of out-migration or in-migration for the state and the locality of origin of the out-migrants or in-migrants is not indicated in this kind of study. This is true also for migration from county to county within the state. The data presented here deal directly with differences in the population due to the recorded data of births and deaths. Further study is necessary to reveal the characteristics of migration.

Several problems in connection with census recording and definitions presented themselves in the analysis and it is necessary to describe the methods which have been followed.<sup>2</sup> In all phases of the analysis an attempt was made to maintain comparability of data reported for the two census dates. In so far as possible, the 1940 definitions of urban and rural were used throughout the decade for vital statistics and for the 1950 population enumeration. In other words, all places having 2,500 people or less in 1940 were kept constant according to their 1940 definition and for the purposes of this study were considered rural in 1950 although they may have increased in size. Also, births and deaths by urban and rural residence according to the 1940 census definition and at the 2,500 level were not available in Ohio or from the National Office of Vital Statistics for the years of 1940 through 1946.

Births and deaths by urban and rural residence for these years were estimated to the 2,500 level from N. O. V. S. reports by a formula developed by Dr. Henry Shryock of the United States Bureau of the Census. Birth rates were standardized for the rural and urban population for the years 1940 and 1950, but since data concerning age and sex composition of the urban and rural population for the intervening years was lacking, it was not possible to standardize these rates according to the number of women of childbearing age in the rural and urban areas; therefore crude birth rates were used.

An additional problem involving comparability of data was posed by the different methods of classifying college students used in the two censuses. Whereas in 1940 unmarried college students were classified as residents of the area where their parents resided, in 1950 all college students were classified as residents of the area in which they were currently living. It is difficult to estimate the effect of this change on the figures obtained for migration (both inter-state and intra-state migration) because of the large number of colleges in Ohio. The College Blue Book for 1950 in its sixth edition listed 49 colleges and universities in the state. An attempt was made to eliminate the effect that this change in the college population would have on the state analysis. This was found to be unfeasible due to the incompleteness of the data on college enrollment within the state.

Since colleges and universities vary as to the number of out of state and out of county students they attract, we expect differences in the effect of this reporting procedure in the county migration figures. For

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<sup>2</sup>The method explained here was also adopted by the states of the North Central Region in order that the information would be comparable between the states of the region.

example, some of Ohio's nationally known colleges, such as Oberlin College and Antioch College had an enrollment almost entirely composed of out of state students. For migration within the state the most important repercussions of this change in reporting would be felt by the counties in which the larger state universities are located. These are Franklin County (Ohio State University), Athens County (Ohio University), Wood County (Bowling Green University), Portage County (Kent State University), and Butler County (Miami University).

A final difficulty in using census data concerned annexations to large cities in metropolitan areas. In holding constant as rural all places under 2,500 as they were in 1940, data were not available concerning the number of people in places adjacent to large cities which were annexed to the city and therefore included in the urban population in 1950.

## POPULATION GROWTH IN OHIO TO 1940

### EARLY SETTLEMENT PATTERNS<sup>3</sup>

Since the French first established themselves in Ohio, when as early as 1667 LaSalle explored the region south of the Great Lakes, the area has undergone periods of variable development. The French did not establish settlements in the region, and it was only after the French and Indian wars, when the English came into possession of the valley that families from Western Pennsylvania "squatted" on the lands west of the Ohio River and formed settlements. Although these "squatters" were the first permanent settlers in Ohio (as early as 1785 it was reported there were 1,500 white persons on the Miami and Scioto rivers, 300 families on the Hocking and Muskingum rivers, and many other settlers along the Ohio bottoms), the active and authorized settlement of the state did not begin until the organization of the Northwest Territory, in 1787.

From the time of the settlement at Marietta in 1788 to the opening of the state canal system in 1832, the tasks of the pioneers were mainly to conquer the wilderness and overcome the isolation of the area. The very early settlers in Ohio were in large part soldiers of the American Revolution. General movements of settlers included New England "Yankees" in the northeastern part of the territory and Pennsylvania Dutch in the central counties. Others were the Swiss coming by way

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<sup>3</sup>Lloyd, W. A., Falconer, J. I., and Thorne, C. E., **The Agriculture of Ohio**. Bulletin 326, Ohio Agricultural Experiment Station, Wooster, Ohio; July, 1918.

of Pennsylvania, and the Virginians and Kentuckians. This immigration into Ohio continued until about 1815 when there began a period of relatively no migration to Ohio.

By 1803 the population of that part of the Northwest Territory which became Ohio was 60,000 people, a sufficient number to entitle it to enter the Union as a state. By the time of the Third Census of the United States in 1810, the state had made a most remarkable growth in population. There were at that time 230,760 inhabitants, an increase over the preceding census of 408.7 percent. There were three principle centers of population in 1800, one in the East along the Ohio River in what is now Jefferson and Belmont Counties, a second at the mouth of the Muskingum, now Washington County, and a third at the mouth of the Miami; it was the latter which showed the most development, containing 27.5 percent of the total population. Cincinnati, the largest town, with a population of 2,540, was located in this Miami Valley. The population in the northeastern section of the state on the Western Reserve, was very sparse, being only three persons per square mile in comparison with 12 to the square mile in the Miami Valley.

At this time the Ohio River was the only outlet for the state's production, and the market at New Orleans was uncertain. The completion of the National Road, between Wheeling and Columbus in 1833 provided an opening to eastern markets and the construction of a canal system in the state at about the same time gave greater access to markets. Following the great German migrations at the turn of the century and the drainage of the black swamp counties in the northwest, Ohio settlement patterns were rather well established by 1910. By this time there were 139 towns with a population of more than 2,500 as compared with nine in 1840. The urban population of 2,665,143 was slightly in excess of the rural population 2,101,978, and represented the tremendous increase for the seventy year period of 3,092 percent over the urban population of 83,491 for 1840.<sup>4</sup>

#### POPULATION GROWTH SINCE 1810

**Growth in the state as a whole.** Table I shows the population of the state by decades since 1810, the year of the first federal census after the state entered the union, with the percentage of increase in the population for each decade over the preceding one.

Numerically the change has consisted of an average increase of approximately 550,000 persons for each decade, the actual range of increase in any decade was 260,000 in 1930-1940 for the smallest gain and 1,039,000 in 1940-1950 for the greatest.

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<sup>4</sup>United States Census of Population: 1950; Report P-A 35.



**TABLE I. Population Growth in Ohio, Rural and Urban, 1810-1950**

| Year of census | Total     | Rural     | Urban     | Percent change over preceding decade |       |       |
|----------------|-----------|-----------|-----------|--------------------------------------|-------|-------|
|                |           |           |           | Total                                | Rural | Urban |
| 1810           | 230,760   | 228,220   | 2,540     | —                                    | —     | —     |
| 1820           | 581,434   | 571,792   | 9,642     | 152.0                                | 150.5 | 279.6 |
| 1830           | 937,903   | 901,245   | 36,658    | 61.3                                 | 57.6  | 280.2 |
| 1840           | 1,519,467 | 1,435,976 | 83,491    | 62.0                                 | 59.3  | 127.8 |
| 1850           | 1,980,329 | 1,737,911 | 242,418   | 30.3                                 | 21.0  | 190.4 |
| 1860           | 2,339,511 | 1,939,076 | 400,435   | 18.1                                 | 11.6  | 65.2  |
| 1870           | 2,665,260 | 1,982,338 | 682,922   | 13.9                                 | 2.2   | 70.5  |
| 1880           | 3,198,062 | 2,167,293 | 1,030,769 | 20.0                                 | 9.3   | 50.9  |
| 1890           | 3,672,329 | 2,162,176 | 1,510,153 | 14.8                                 | —0.2  | 46.5  |
| 1900           | 4,157,545 | 2,159,163 | 1,998,382 | 13.2                                 | —0.1  | 32.3  |
| 1910           | 4,767,121 | 2,101,978 | 2,665,143 | 14.7                                 | —2.6  | 33.4  |
| 1920           | 5,759,394 | 2,082,258 | 3,677,136 | 20.8                                 | —0.9  | 38.0  |
| 1930           | 6,646,697 | 2,139,326 | 4,507,371 | 15.9                                 | 2.7   | 22.6  |
| 1940           | 6,907,612 | 2,294,626 | 4,612,986 | 3.9                                  | 7.3   | 2.3   |
| 1950*          | 7,946,627 | 2,769,150 | 5,177,477 | 15.0                                 | 20.7  | 12.2  |

\*For purposes of comparison all towns which were rural in 1940 were kept as rural even though the 1950 census classified them as urban.

When we look at population growth for the state from the standpoint of rates of increase, however, we find the trend has been one of a slightly fluctuating decline. Fluctuations are especially notable in the 1870 census which shows a sharp drop in the percentage increase but which is followed in the next decade by a decided increase. Again the period 1910-1920 shows a greater percentage increase than a declining trend would warrant. Finally, the 1940-1950 decade represents a return to the 1920-1930 rate of increase, after a very considerable decline in the 1930-1940 decade.

**Urban and rural growth.** The population of Ohio in 1830 at the end of the Pioneer Period was almost 100 percent rural, while a decade later it was 95 percent rural. Shortly after the turn of the century, however, it was only 44.1 percent rural (1910), and since then the state has maintained its predominance of urban population. The predominance of urban population in Ohio preceded that of the United States as a whole by ten years.

The rates of growth for the rural population declined rapidly, reaching a negative point of —0.2 or actual loss by 1880-1890. We see in Table I that it was not until the 1930 census that the rural rate of

growth was on the plus side again. Since that time it has continued to gain, although the gain has been due to the increase in rural non-farm population rather than farm population.

The total urban population, although showing a declining rate of increase, has remained considerably above that of the rural population of Ohio. The greatest decline occurred in the depression decade of the 1930's when the movement of people from rural to urban areas was very slow.

The rate of change in population growth is higher for the rural population than for the urban population in both decades, 1930-1940 and 1940-1950, for the first time since 1810. However, this would reflect the growing tendency since 1930 for the non-farm, urban employed population to occupy rural residences. This is the familiar phenomenon of the "urban fringe" pattern and follows the actual decline of the rural-farm population.

## **POPULATION CHANGE BY ECONOMIC AREAS, 1940-1950**

### **A DESCRIPTION OF THE AREAS IN THE STATE<sup>5</sup>**

Since the population growth in the state during the last decade has been uneven geographically, and since changes in county population are more marked and less stable, an examination of the differential rates of population growth in Ohio will be made in terms of the economic areas of the state. This unit has the advantage of being smaller than the state, and larger than the counties.

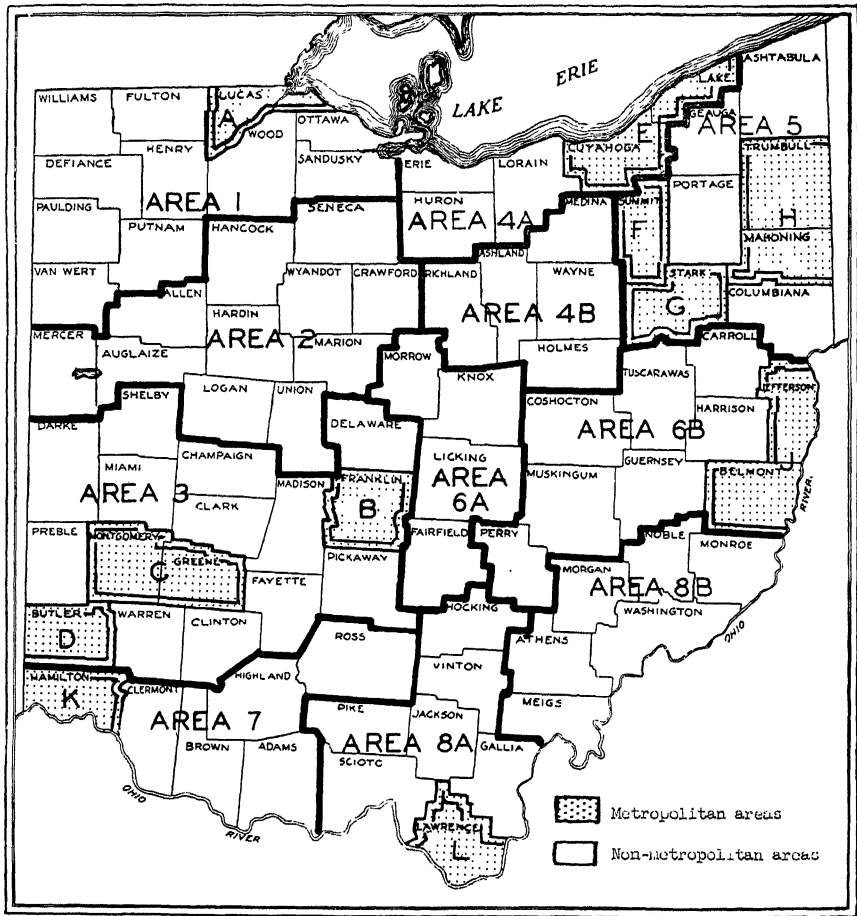
In Ohio there are eleven such economic areas, whose areas vary from 2,080 square miles to 7,159 square miles. Four of these economic areas contain no metropolitan area (cities or urbanized areas of 100,000 or more population). These four areas vary in population from 153,421 to 433,560 and in density from 55 to 104 persons per square mile. They vary in number of farms from 4,776 to 27,664. There are eleven metropolitan areas located in the remaining seven economic areas. The largest in terms of population is the Cleveland metropolitan area with a 1950 population of almost 1,500,000 and density of 874 persons per square mile. On Map 1 in this publication the metropolitan areas are identified by capital letters.

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<sup>5</sup>Economic areas used in this bulletin were delineated in the publication by Donald J. Bogue, **State Economic Areas, A Description of the Procedure Used in Making a Functional Grouping of the Counties of the United States**. Department of Commerce, Bureau of the Census, 1951.

The following description of the economic areas in the state is based on some of the factors which were considered in the process of delineating the areas by their demographic, physiographic, industrial and commercial activities, production and exchange of economic goods, and cultural factors.<sup>6</sup> It should be observed here that in 1950 the eleven metropolitan areas A through L contained 5,036,080 persons as compared with 2,910,547 persons living in the eleven non-metropolitan areas.

<sup>6</sup>For the procedure used in delineating economic areas see D. J. Bogue, op. cit.



Map 1. Economic Areas of Ohio

Some general remarks concerning Ohio's agriculture, which is highly diversified, seem appropriate. The following quotation summarizes the over-all conditions concisely:

"Several different types of farming are usually found in most communities. The prevalence of different combinations of crops or of crops and livestock is influenced to some extent by preferences of individual farmers, size of farm, local market, and the climatic factors of temperature and rainfall. However, soil type and topography are the factors determining three generalized farm areas: (a) western, corn belt; (b) northeastern, dairy; (c) southeastern, general farming. Glacial limestone soils dominate in the west, glacial sandstone and shale in the northeast and unglaciated sandstone and shale in the hilly southeast. With respect to the type of farming, borders of these areas are, to some extent, transition zones.<sup>7</sup>

**AREA 1, A** is in the extreme northwestern corner of the state, its eastern boundaries extending along the shore of Lake Erie.

**Non-metropolitan Area 1.** The entire area is flat, covered with glacial drift over limestone deposited in the pre-historic lake bed. This is the area with the largest portion of land under cultivation. The farms in this area are highly mechanized and rural levels of income rank second highest in the state. Cash grain crops are of major importance.

**Metropolitan Area A.** With a density that is average for the state, Area 1 has approximately half its population located in Area A, the Toledo metropolitan area, there being no other large city in the area. A large percentage of the population is employed in manufacturing.

**AREA 2** is located just south of Area 1, and the soil and topography are similar, except that in the more easterly counties the surface becomes more rolling. The area is largely rural and has no cities of 100,000 or more, but has two cities whose combined population comprise approximately one-fourth of the total population of the area. The rural level of living is third highest in the state.

**AREA 3, B, C, D,** is constituted of the middle western group of counties.

**Non-Metropolitan Area 3.** The land is highly productive because of the large amount of rich gently rolling to level lands, and cultivation of practically all land is possible except on stream banks. This area has the largest number of farms. The area is highly mechanized and the level of living of farm operators is highest.

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<sup>7</sup>Moore, H. R. and Bailey, R. A., "Ohio Farm Real Estate Prices". Research Bulletin 711, July, 1951, p. 18.

**Metropolitan Areas B, C, D.** In combination the three metropolitan areas, Columbus, Dayton, Middletown-Hamilton, contain 70 percent of the population of the entire area. Over 18 percent of the total number of persons in the state employed in manufacturing are located in this area, bringing its rank to third.

**AREA 4a, E** contains the counties clustered around the Lake Erie shore, all being on the lake front except one.

**Metropolitan Area E.** The most industrialized area in the state, this area, which includes the metropolitan area of Cleveland, employs 26 percent of all persons employed in manufacturing in the state. Eighty-six percent of the population of the area is located in the Cleveland metropolitan area.

**Non-metropolitan Area 4a.** This area has the fewest number of farms although the farm operator level of living is fourth highest in the state. Truck farming and dairying are important sources of cash income.

**AREA 4b,** south of Area 4a, is mainly rural having one place, Mansfield, with a population over 25,000. The terrain in the northern part is level to gently rolling plateau, the southern part being hilly, in some areas the land being too steep for successful cultivation. The rural level of living is slightly below average for the state. Dairy products and hogs are the main sources of agricultural income.

**AREA 5 F, G, H** is the extreme northeastern section of the state, including three metropolitan areas—Youngstown, Canton, and Akron. Employment opportunities in manufacturing are second highest in the state, and 81 percent of the entire population is concentrated in the eight cities over 25,000 and in the urbanized areas. Agriculturally the area is predominantly dairying since the soil is better adapted to grass than cultivated crops.

**AREA 6a** in the central part of the state is the smallest in area and has next to the least density. Much of the land in the southern part is too steep for profitable cultivation, and the soil while productive is easily exhausted unless properly managed. The two principal cash products are dairy and hogs. Employment opportunities in manufacturing are slight, Newark being the largest in the area, with a population of 34,275.

**AREA 7 K** is located in the extreme southwestern section of the state, with all but two counties bordering on the Ohio River. This being the most densely populated area in the state, the Cincinnati metropolitan area (excluding the Kentucky population) contains 81

percent of the population in the area. Ten percent of the state's population employed in manufacturing is found here. Farming is a relatively unimportant and unspecialized occupation, the farm cash income being derived from tobacco, dairy products and hogs.

**AREAS 6b J, 8a L, 8b** all lie in the non-glaciated southeastern portion of the state. With the lowest densities, they also have the lowest rural levels of living. Dairy and poultry are the main sources of farm cash income. The surface of the country is very hilly, there being practically no level land except in the narrow stream valleys. The hills are very steep and rugged and largely covered with forest. Throughout these areas many farms are underlaid with valuable beds of coal, which is being extracted, making mining an important occupation. In Area 6b lies the metropolitan area of Wheeling, West Virginia and Steubenville, Ohio. The Ohio part of metropolitan Area J contains slightly over half of the population of the entire economic area. The other metropolitan area, Area L, is located within Area 8a and is the Huntington, West Virginia and Ashland, Kentucky area. The concentration of population in the Ohio section of the metropolitan area is 37 percent of the total population in the economic area.

#### **RECENT CHANGES IN THE TOTAL, URBAN AND RURAL POPULATION BY ECONOMIC AREAS**

Population increased generally throughout the state by 15.0 percent between 1940 and 1950. Whereas population increased in the combined metropolitan areas by 18.2 percent the increase amounted to only 10.0 percent in the combined non-metropolitan areas (Table II).

In the southeastern part of the state Areas 8a and 8b experienced a decline in population of —3.8 and —4.9 percent respectively. The most rapid proportionate gains in population in the metropolitan areas are found in Area C, 38.0 percent (Greene and Montgomery Counties), Area B, 29.5 (Franklin County) and Areas F and G each about 21 percent (Summit and Stark Counties). The heaviest population increase in the non-metropolitan areas occurred with 26.1 percent in Area 4a which is adjacent to the largest metropolitan area in the state, Cuyahoga County. Every metropolitan area except one, Area J, with —4.9 percent (Jefferson and Belmont Counties) had a gain in total population. (Table II).

For the state as a whole the urban population increased 12.2 percent; the rate of urban gain for the combined metropolitan areas and the combined non-metropolitan areas was 12.3 and 12.0 percent respectively (Table III). However, metropolitan Area J decreased

**TABLE II. Change in Total Population, Economic Areas in Ohio,  
1940-1950**

| Areas            | 1940<br>population | 1950<br>population | Change 1940-50 |         |
|------------------|--------------------|--------------------|----------------|---------|
|                  |                    |                    | Number         | Percent |
| The State        | 6,907,612          | 7,946,627          | 1,039,015      | 15.0    |
| Metropolitan     | 4,261,200          | 5,036,080          | 774,880        | 18.2    |
| A                | 344,333            | 395,551            | 51,218         | 14.9    |
| B                | 388,712            | 503,410            | 114,698        | 29.5    |
| C                | 331,343            | 457,333            | 125,990        | 38.0    |
| D                | 120,249            | 147,203            | 26,954         | 22.4    |
| E                | 1,267,270          | 1,465,511          | 198,241        | 15.6    |
| F                | 339,405            | 410,032            | 70,627         | 20.8    |
| G                | 234,887            | 283,194            | 48,307         | 20.6    |
| H                | 372,566            | 416,544            | 43,978         | 11.8    |
| J                | 193,743            | 184,235            | —9,508         | —4.9    |
| K                | 621,987            | 723,952            | 101,965        | 16.4    |
| L                | 46,705             | 49,115             | 2,410          | 5.2     |
| Non-metropolitan | 2,646,412          | 2,910,547          | 264,135        | 10.0    |
| 1                | 280,731            | 302,584            | 21,853         | 7.8     |
| 2                | 393,272            | 433,560            | 40,288         | 10.2    |
| 3                | 412,101            | 465,692            | 53,591         | 13.0    |
| 4a               | 190,391            | 240,080            | 49,689         | 26.1    |
| 4b               | 205,068            | 242,238            | 37,170         | 18.1    |
| 5                | 224,885            | 268,215            | 43,330         | 19.3    |
| 6a               | 157,439            | 175,230            | 17,791         | 11.3    |
| 6b               | 276,876            | 281,540            | 4,664          | 1.7     |
| 7                | 156,698            | 167,514            | 10,816         | 6.9     |
| 8a               | 187,689            | 180,473            | —7,216         | —3.8    |
| 8b               | 161,262            | 153,421            | —7,841         | —4.9    |

—5.9 percent in its urban population paralleling the —4.9 percent drop in its total population. The same trend is reflected in the rural population of Area J which decreased —3.9 percent (Table IV).

Rural population of the state experienced an unusual increase of 20.7 percent in the decade preceding 1950 (Table IV). The combined metropolitan areas experienced a phenomenal increase of 46.8 percent in their rural population as against the lesser increase of 8.6 percent of the combined non-metropolitan areas. Area 8b shows a decline in rural population at the notable rate of —10 percent, Area 8a had practically no change. Three non-metropolitan areas had less than 5.0 percent change in their rural population. These were Area 1 with 1.6 percent, Area 6b with 0.04 percent, and Area 8a with 0.1 percent.

## RURAL POPULATION CHANGES AND THE URBAN FRINGE

The growth in population in the metropolitan counties of Ohio, and the large percentage of increase in rural population in these areas indicates that the increase is not due to a larger agricultural population, but to the movement of urban-employed workers toward residences in the urban fringe.

As seen in Table IV the great gain in rural population occurred in the metropolitan areas with an increase of 340,216 people as against only 134,308 in non-metropolitan areas.

**TABLE III. Change in Urban Population, Economic Areas in Ohio, 1940-1950**

| Areas            | 1940<br>population | 1950<br>population* | Change 1940-50 |         |
|------------------|--------------------|---------------------|----------------|---------|
|                  |                    |                     | Number         | Percent |
| The State        | 4,612,986          | 5,177,477           | 564,491        | 12.2    |
| Metropolitan     | 3,534,417          | 3,969,081           | 434,664        | 12.3    |
| A                | 287,032            | 309,164             | 22,132         | 7.7     |
| B                | 330,268            | 413,951             | 83,683         | 25.3    |
| C                | 237,096            | 272,769             | 35,673         | 15.0    |
| D                | 84,568             | 98,590              | 14,022         | 16.6    |
| E                | 1,207,772          | 1,362,652           | 154,880        | 12.8    |
| F                | 292,817            | 337,441             | 44,624         | 15.2    |
| G                | 165,380            | 182,194             | 16,814         | 10.2    |
| H                | 273,370            | 277,560             | 4,190          | 1.5     |
| J                | 95,497             | 89,829              | -5,668         | -5.9    |
| K                | 544,766            | 608,598             | 63,832         | 11.7    |
| L                | 15,851             | 16,333              | 482            | 3.0     |
| Non-metropolitan | 1,078,569          | 1,208,396           | 129,827        | 12.0    |
| 1                | 79,374             | 97,996              | 18,622         | 23.4    |
| 2                | 195,073            | 217,850             | 22,777         | 11.7    |
| 3                | 174,106            | 197,549             | 23,443         | 13.5    |
| 4a               | 119,854            | 150,051             | 30,197         | 25.2    |
| 4b               | 85,901             | 97,358              | 11,457         | 13.3    |
| 5                | 106,767            | 120,166             | 13,399         | 12.5    |
| 6a               | 63,549             | 70,640              | 7,091          | 11.2    |
| 6b               | 115,153            | 119,748             | 4,595          | 4.0     |
| 7                | 29,070             | 30,121              | 1,051          | 3.6     |
| 8a               | 72,331             | 64,977              | -7,354         | -10.2   |
| 8b               | 37,391             | 41,940              | 4,549          | 12.2    |

\*All places that had 2,500 people or less in 1940 were kept constant according to their 1940 definition and were considered rural for this study.



In the treatment of the data it was necessary to obtain comparability of 1950 figures with 1940 figures; therefore a part of the "urban fringe" around the larger cities are considered "rural" in this bulletin. In 1950 there were approximately 98,056 persons living in places adjacent to the large cities in the state, which places are now large enough to be classified as "urban" but which for purposes of comparability are maintained in their 1940 classification and included in the "rural" population. Of the state's total increase of 474,524 in rural population, 340,216 took place in the counties containing these cities, indicating that much of the growth in rural population can be attributed to the growing "urban fringe."

**TABLE IV. Change in Rural Population, Economic Areas in Ohio, 1940-1950**

| Areas            | 1940<br>population | 1950<br>population* | Change 1940-50 |         |
|------------------|--------------------|---------------------|----------------|---------|
|                  |                    |                     | Number         | Percent |
| The State        | 2,294,626          | 2,769,150           | 474,524        | 20.7    |
| Metropolitan     | 726,783            | 1,066,999           | 340,216        | 46.8    |
| A                | 57,301             | 86,387              | 29,086         | 50.8    |
| B                | 58,444             | 89,459              | 31,015         | 53.1    |
| C                | 94,247             | 184,564             | 90,317         | 95.8    |
| D                | 35,681             | 48,613              | 12,932         | 36.2    |
| E                | 59,498             | 102,859             | 43,361         | 72.9    |
| F                | 46,588             | 72,591              | 26,003         | 55.8    |
| G                | 69,507             | 101,000             | 31,493         | 45.3    |
| H                | 99,196             | 138,984             | 39,788         | 40.5    |
| J                | 98,246             | 94,406              | —3,840         | —3.9    |
| K                | 77,221             | 115,354             | 38,133         | 49.4    |
| L                | 30,854             | 32,782              | 1,928          | 6.2     |
| Non-metropolitan | 1,567,843          | 1,702,151           | 134,308        | 8.6     |
| 1                | 201,357            | 204,588             | 3,231          | 1.6     |
| 2                | 198,199            | 215,710             | 17,511         | 8.8     |
| 3                | 237,995            | 268,143             | 30,148         | 12.7    |
| 4a               | 70,537             | 90,029              | 19,492         | 27.6    |
| 4b               | 119,167            | 144,880             | 25,713         | 21.6    |
| 5                | 118,118            | 148,049             | 29,931         | 25.3    |
| 6a               | 93,890             | 104,590             | 10,700         | 11.4    |
| 6b               | 161,723            | 161,792             | 69             | 0.04    |
| 7                | 127,628            | 137,393             | 9,765          | 7.6     |
| 8a               | 115,358            | 115,496             | 138            | 0.1     |
| 8b               | 123,871            | 111,481             | —12,390        | —10.0   |

\*All places that had 2,500 people or less in 1940 were kept constant according to their 1940 definition and were considered rural for this study.

Data now available in the 1950 rural population classified separately into farm and non-farm population show a marked drop in the rural-farm population from 1940 to 1950. In 1940 there were 1,070,000 rural-farm people in Ohio. In 1950 this had been reduced to only 885,000.

Part of the decrease in farm population is due to a change in definition by the Bureau of the Census, whereby "persons on farms" who were paying cash or rent for their houses or yards were classified as non-farm. Occupants of motels, summer camps, tourist camps and inmates of institutions were classified as non-farm in 1950.

Dr. Hagood and Mr. Sharp state, "The changes in definition are believed to account for not more than about a third of the total decrease in the rural-farm population in the United States between 1940 and 1950. The total decrease was about 6.6 million, or 22 percent of the 1940 rural-farm population. At the same time there was a 12 percent reduction in the number of farms in the country."<sup>8</sup>

The reduction of both number of farms and rural population in Ohio are parallel to the national decrease in number of farms and rural population, although not in the same proportions. Whereas in the United States the number of farms decreased 12 percent and the rural farm population decreased 22 percent, in Ohio the number of farms decreased 14.7 percent and the rural farm population decreased only 17.3 percent.

If the change in number of farms is a sensitive index for the change in farm population, the greatest loss should occur in the counties around metropolitan areas. This is reflected in the figures, which show an over-all decrease in farms of 18.9 percent for metropolitan areas. The largest losses of farms occurred in metropolitan Areas E (—32.5 percent), K (—25.6 percent) and B (—24.8 percent). The loss in Area D was not as great as one might expect. The number of farms decreased between 1940 and 1950 in every economic area in the state.

In summary the population increase of 15 percent in Ohio between 1940 and 1950 seems concentrated in a diagonal belt which cuts across the state from the southwest to the northeast, in this path are located the most metropolitan areas. The same counties have had the greatest decrease in number of farms, indicating that the accompanying increase in rural population is a function of the "urban fringe" development.

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<sup>8</sup>Hagood, Margaret J., and Sharp, Emmet F., "Rural-Urban Migration in Wisconsin", 1940-1950. Wisconsin Agricultural Experiment Station Research Bulletin No. 176, University of Wisconsin, August 1951, p. 12.

Heaviest losses in population were experienced by the southeastern economic areas which are non-metropolitan and whose rural population losses are most significant.

### **BIRTH AND DEATH RATES, 1940-1949**

The preceding description of net population changes are a function of natural increase and net migration. The factors of natural increase and net migration will be examined more fully in terms of a more detailed analysis of their effect on Ohio's increase in population. The birth and death rates for all counties in Ohio are based on data supplied by the National Office of Vital Statistics for the years 1940 through 1949.<sup>9</sup>

#### **CHANGES IN BIRTH RATE**

The decade of 1940 to 1950 is marked by a startling increase in the crude birth rate as shown in Table V. Births increased from 16.6 births per thousand people of the total population in 1940 to 23.7 births per 1,000 people in 1949. The rate in the first four years increased somewhat, whereas in 1944 and 1945 the rate declined, paralleling the general decline in birth rates throughout the United States because of factors connected with the war period.

Birth rates in Ohio from 1946 to 1949 show a marked increase paralleling the general "baby boom" experienced throughout the United States during that time.

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<sup>9</sup>The National Office of Vital Statistics from 1940 through 1945 recorded resident births and deaths by areas as follows: rural births and deaths were in places of less than 10,000 and urban births and deaths were in cities above 10,000. To insure comparability of data with the other states in the North Central Region it was necessary to interpolate the births and deaths from the 10,000 level to a rural-urban division at the 2,500 population level.

The N. O. V. S. furnished to the project for 1946-1949, data which represented resident births and deaths recorded for places at the 2,500 level. From these figures it was determined what proportion of the births and deaths occurred in places of 2,500 to 10,000 population. The formula used for these estimates was developed by Dr. Henry Shryock, U. S. Bureau of the Census.

**TABLE V. Crude Birth Rate in Ohio by Urban and Rural  
Residence, 1940-1949**

| Year           | Total | Urban | Rural |
|----------------|-------|-------|-------|
| 1940 . . . . . | 16.6  | 16.6  | 16.5  |
| 1941 . . . . . | 18.2  | 18.6  | 17.3  |
| 1942 . . . . . | 20.7  | 22.2  | 17.9  |
| 1943 . . . . . | 21.0  | 21.6  | 19.3  |
| 1944 . . . . . | 19.5  | 20.2  | 18.2  |
| 1945 . . . . . | 19.3  | 20.4  | 17.0  |
| 1946 . . . . . | 22.7  | 24.2  | 19.7  |
| 1947 . . . . . | 25.4  | 27.1  | 22.3  |
| 1948 . . . . . | 23.4  | 24.7  | 21.0  |
| 1949 . . . . . | 23.7  | 24.7  | 21.7  |

Source: Births by urban and rural residence according to the 1940 definition, were estimated to the 2,500 level from N.O.V.S. reports for 1940-1946 and taken directly from data furnished by the N.O.V.S. for 1946-1949.

Population estimates for the total population are from the Bureau of the Census, P-25, No. 47. The urban-rural distribution of population was estimated by interpolation between April 1940 and April 1950.

Between 1940 and 1947 the crude birth rate increased 53 percent for the entire state. The urban part of the state increased 63.3 percent during this period while the rural increased 35.2 percent. During each year of the entire ten years in Ohio the crude urban birth rate exceeded the crude rural birth rate.

The crude birth rate, however, is a deceptive statistic since it does not take into account variations in the age and sex compositions of rural and urban populations. The number of women between the ages of 15 and 44, if this is considered as the childbearing age, has decreased in the rural population due to the disproportionate migration of rural women to cities for employment opportunities. As a result the crude birth rate for the rural population is lower than it would otherwise be. By using the age and sex distributions in the total population of Ohio for 1940 and 1950 as standard populations, it is possible to compute standardized birth rates for 1940 and 1949 as shown in Table VI.

In 1940 the standardized urban birth rate was 15.4 births per 1,000 people as compared with a rural rate of 19.5. Ten years later the standardized urban birth rate had increased to 23.8 while the rural rate climbed to 24.0 making urban and rural standardized rates almost equal. This is a notable reversal of the historic trends in rural and urban birth rates. These figures suggest that since the age and sex

**TABLE VI. Standardized Birth Rates for Ohio,  
1940 and 1949 per 1,000 People**

|                     | 1940      |           |         | 1949      |           |         |
|---------------------|-----------|-----------|---------|-----------|-----------|---------|
|                     | Total     | Urban     | Rural   | Total     | Urban     | Rural   |
| No. of women        |           |           |         |           |           |         |
| 15-44 years . . .   | 1,660,997 | 1,179,552 | 481,445 | 1,796,852 | 1,240,214 | 556,638 |
| No. of births . . . | 114,663   | 75,594    | 39,069  | 189,428   | 130,378   | 59,050  |
| Standardized        |           |           |         |           |           |         |
| rates* . . . . .    | 16.6      | 15.4      | 19.5    | 23.7      | 23.8      | 24.0    |
| Crude rates . . . . | 16.6      | 16.6      | 16.5    | 23.7      | 24.7      | 21.7    |

\*Rates were standardized on the basis of the age-sex distribution of the total population of the state for 1940 and 1950.

Source: Rates were derived from population figures contained in the U. S. Census for 1940 and the Advanced Population Reports for 1950 as well as from N.O.V.S. data for 1940 and 1949. The formula for standardization is from T. Lynn Smith, Population Analysis, McGraw-Hill Book Co. Inc., New York, 1948, pp. 194-197.

composition are held constant there are important factors influencing the rates other than the movement to the city by rural women of child-bearing age.

Since data on the age and sex structure of the population are unavailable by economic areas, standardized rates are lacking for these sub-sections of the state.

#### BIRTH RATES BY ECONOMIC AREAS

While there was a general increase in birth rates throughout Ohio, there were found to be several differences in the rates when the data is broken down by economic areas (Table VII). The increase in the crude birth rate was much higher in the metropolitan areas than in the non-metropolitan areas.

In 1940 the metropolitan birth rate was 16.0 births per thousand people while in 1949 it was 24.1; a difference of 8.1. In the non-metropolitan areas for 1940 the birth rate was 17.6, in 1949 it was 23.4, slightly lower than the metropolitan rate and a difference of only 5.8. This is a reverse relationship with the degree of urbanity that is usually expected for birth rates and as has been the case in the past.

In comparing rural and urban the table shows a similar relationship as between metropolitan and non-metropolitan. In 1940 the crude birth rate for metropolitan or more highly urban areas was 15.9 for urban and 16.3 for rural. In non-metropolitan areas for the same year they are about equal with 17.9 for urban and 17.4 for rural. The urban rate, however, even in 1940, was slightly above the rural due to the non-metropolitan rates. Rural and urban birth rates in Ohio showed signs of differing from the expected patterns even then.

**TABLE VII. Crude Birth Rates for Economic Areas and by Rural and Urban for Ohio, 1940 and 1949**

| Areas            | 1940* |       |       | 1949  |       |       |
|------------------|-------|-------|-------|-------|-------|-------|
|                  | Total | Urban | Rural | Total | Urban | Rural |
| The State        | 16.6  | 16.4  | 16.5  | 23.8  | 25.2  | 21.3  |
| Metropolitan     | 16.0  | 15.9  | 16.3  | 24.1  | 25.3  | 19.4  |
| A                | 16.0  | 15.8  | 16.9  | 23.9  | 27.0  | 12.9  |
| B                | 15.8  | 15.9  | 15.2  | 24.3  | 23.6  | 27.8  |
| C                | 17.6  | 19.0  | 14.1  | 26.7  | 35.3  | 14.0  |
| D                | 18.6  | 19.5  | 16.4  | 25.8  | 26.9  | 23.7  |
| E                | 15.1  | 15.2  | 14.3  | 23.0  | 23.1  | 21.4  |
| F                | 15.5  | 15.3  | 16.9  | 25.7  | 26.4  | 22.4  |
| G                | 15.4  | 15.2  | 16.1  | 24.5  | 28.6  | 17.0  |
| H                | 16.4  | 16.8  | 15.4  | 23.5  | 27.0  | 16.6  |
| J                | 17.2  | 17.2  | 17.2  | 23.2  | 24.0  | 22.4  |
| K                | 16.0  | 15.7  | 18.7  | 23.6  | 23.9  | 22.1  |
| L                | 19.1  | 15.9  | 20.7  | 25.9  | 23.4  | 27.1  |
| Non-metropolitan | 17.6  | 17.9  | 17.4  | 23.4  | 24.7  | 22.5  |
| 1                | 17.9  | 19.3  | 17.3  | 24.5  | 24.5  | 24.5  |
| 2                | 17.6  | 17.7  | 17.5  | 24.2  | 25.8  | 22.5  |
| 3                | 17.6  | 17.9  | 17.3  | 23.9  | 25.7  | 22.6  |
| 4a               | 16.5  | 16.6  | 16.3  | 24.6  | 24.1  | 25.5  |
| 4b               | 18.1  | 18.4  | 17.9  | 24.4  | 27.2  | 22.5  |
| 5                | 16.8  | 17.5  | 16.1  | 23.0  | 23.5  | 22.5  |
| 6a               | 16.9  | 20.3  | 14.7  | 21.9  | 24.7  | 20.1  |
| 6b               | 17.0  | 17.1  | 16.9  | 22.3  | 23.4  | 21.5  |
| 7                | 19.0  | 21.5  | 18.4  | 22.0  | 24.4  | 21.5  |
| 8a               | 19.2  | 16.2  | 21.2  | 23.3  | 22.6  | 23.8  |
| 8b               | 17.6  | 19.8  | 17.0  | 20.6  | 22.7  | 19.8  |

\*Proportion of rural and urban birth rates for 1940 were estimated by an unpublished formula developed by Dr. Henry Shryock, U. S. Bureau of the Census.

In 1949 these patterns are completely contrary to those anticipated from historical trends. For Ohio metropolitan areas, the urban crude birth rate was 25.3 whereas the rural was 19.4, a difference of 5.9 births per 1,000 people more for urban areas. The rates for non-metropolitan areas for the same year was urban 24.7 and rural 22.5, again showing a higher rate for urban in the less densely populated areas of the state. Undoubtedly if these rates were standardized these wide differences would not appear. However, the trend of the more rapid increase in urban birth rates cannot be denied.

The southern and southeastern areas of Ohio (6a, 6b, 7, 8a, and 8b, as well as the related metropolitan areas J, K, and L) experienced a smaller amount of increase in rates than did the western and north-eastern areas, which were characterized by similar increases.

The general increase in population in the northeastern and eastern areas (4a, 4b, 5 and E, F, G and H) as well as the northwestern and west central areas (1, 2, 3, and B, C, D and E) correlates positively with the greater increase in birth rates. The relatively small increase or decrease in population in the southern and southeastern areas correlates positively with the small increase in the rate.

In general, the areas with a higher proportion of their population living in urban areas had the higher rate of increase in their birth rates during the decade. There are three scattergrams in Figure 1. It was found as shown in the upper one that in the total population there is a positive correlation of .56 between the amount of increase in the birth rate for each of the economic areas and the percentage of the population that was urban in 1940.<sup>10</sup>

This same relationship does not hold, however, when differences in the increase of urban and rural births are examined separately. In the center section of Figure 1 the correlation between the change in the urban birth rates of the economic areas and the percentage of population that was urban in 1940 is  $+.64$  showing that urban birth rate increases were significantly and closely related to the degree that the areas were urban.

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<sup>10</sup>Correlation coefficients (Pearsonian  $r$  for ungrouped data) of .4227 are significant at the five percent level with an  $N$  of 22 and of .6021 with an  $N$  of 11. See appendix table on page 701 of Mills, Frederick C., **Statistical Methods**, Revised. Correlations which are less than those acceptable at the five percent level have not been relied upon, but have been stated only to show the direction of the possible linear relationship between two variables.

In contrast to the above, the very low but negative correlation of  $-.22$  was found in the lower section of Figure 1, between rural birth rates and percentage of urban population in the economic areas in 1940. In terms of rural birth rates the areas with the greatest proportion of urban population were the most erratic in the amount of increase. Of the ten areas which had over 60 percent of their population urban in 1940, five had gains of over four births per 1,000 people in the rural birth rate between 1940 and 1950, (these were areas B, D, E, F and 4a. The latter lies adjacent to Cleveland) and five either had gains under four or losses up to four rural births per 1,000 (these were K, H, G, C, and A).

Urban rates of increase for all economic areas show a rather strong positive correlation with the degree of urbanization. Rural rates, however, when all areas are included show a very slight negative relationship. This demonstrates the importance of the increase in the urban birth rate in accounting for the greater part of the increase.

#### **INCREASE IN BIRTH RATES FOR METROPOLITAN AND NON-METROPOLITAN AREAS**

It is noteworthy to observe the differences between the metropolitan and non-metropolitan areas in the rural and urban distributions.

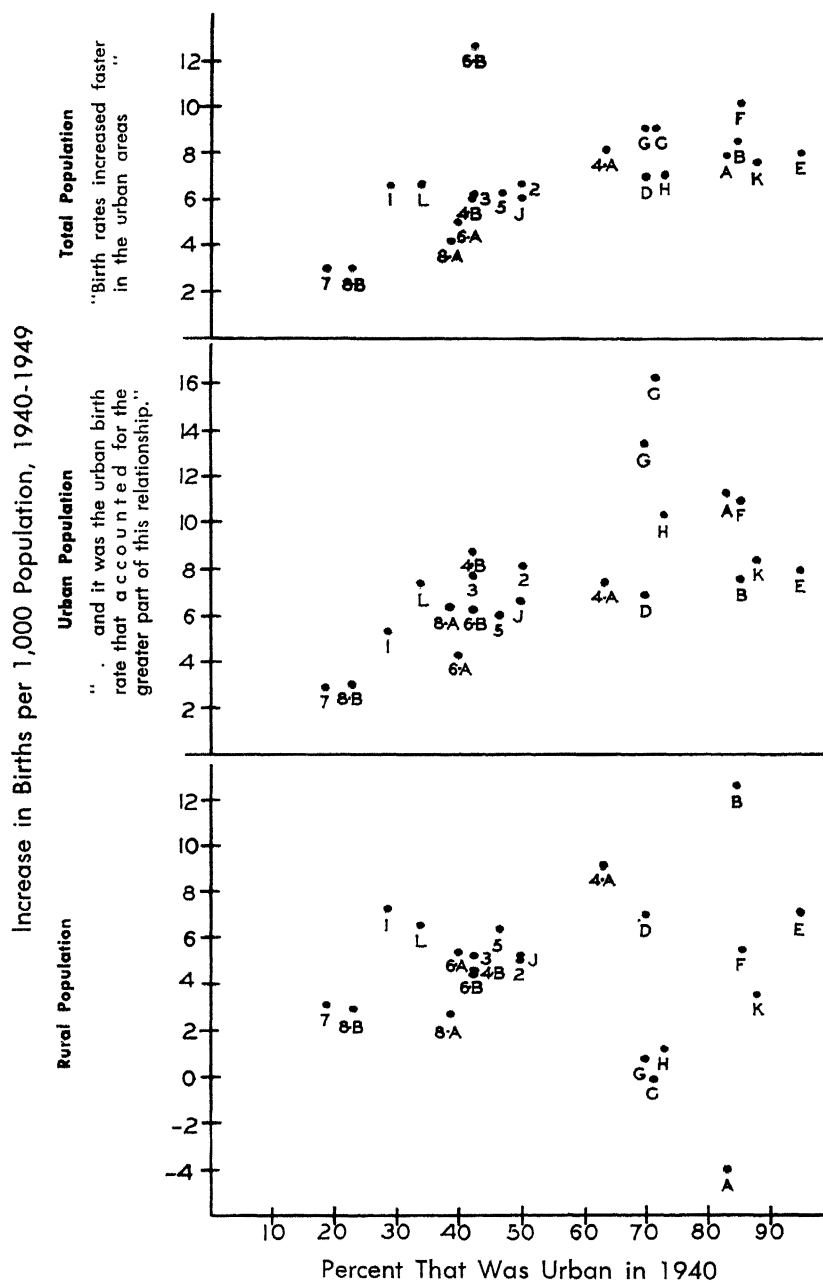
First of all the scattergrams in Figure 1 show that the change in the birth rate for non-metropolitan areas is a consistently increasing one as it is related to the percentage to which these areas are urban. In the rural population  $r = +.56$ , in the urban  $r = +.65$ .

The metropolitan areas do not follow a similar pattern. The correlation between the same two factors for the urban population in metropolitan areas is very slight  $+.18$ . For the rural population in these same areas  $r = -.23$ . These correlations are not high enough to indicate any significant trends or differences between them.

It will be noted, however, that the lack of correlation in the metropolitan areas is opposed to a relatively high relationship consistently indicated in the non-metropolitan areas.

It is also notable in the metropolitan areas that although they are inconsistent in their changes in rates when the rural and urban populations are examined separately yet when added together for total rate increases these differences tend to cancel out. For example, Area C is very high in the urban part of the scattergram and low in the rural. Area B is low in the urban and yet had a very high degree of change in





**Fig. 1.—Increase in Crude Birth Rate, 1940 to 1949, in Relation to Percentage of the Population that was Urban in 1940**

the rural. Area A likewise appeared in widely different positions in the rural and urban scattergrams tending in its total position to compensate for its very low position in the rural birth rates.

### **SOME FACTORS THOUGHT TO AFFECT BIRTH RATES**

In an effort to find out from available data if certain factors were affecting the birth rate in its rapid rise in Ohio during the decade 1940 to 1950 two other correlative checks were made. In Figure 2 the economic areas are plotted to show what degree of relationship may exist between the increase in rural and urban birth rates. A modest negative correlation of  $-.41$  was found for all economic areas of Ohio. This substantiates, as previously noted, the importance of the increase in urban birth rates in the total picture, indicating that rurality per se was not significant as a factor in the increase of the Ohio birth rate. The forces affecting urban birth rates did not affect the rural rates in a similar way.

When changes in rural and urban rates of the metropolitan areas only are observed an even higher negative correlation of  $-.66$  was obtained.

For non-metropolitan areas however, a moderate positive  $r$  of  $+.38$  appeared, thus indicating more consistency in the rural and urban increases in birth rates. It would be difficult to say, however, whether the forces involved affected rural and urban areas similarly or not. In light of the differences in metropolitan areas this must be reserved for further study.

### **RURAL BIRTH RATES AND LEVEL OF LIVING**

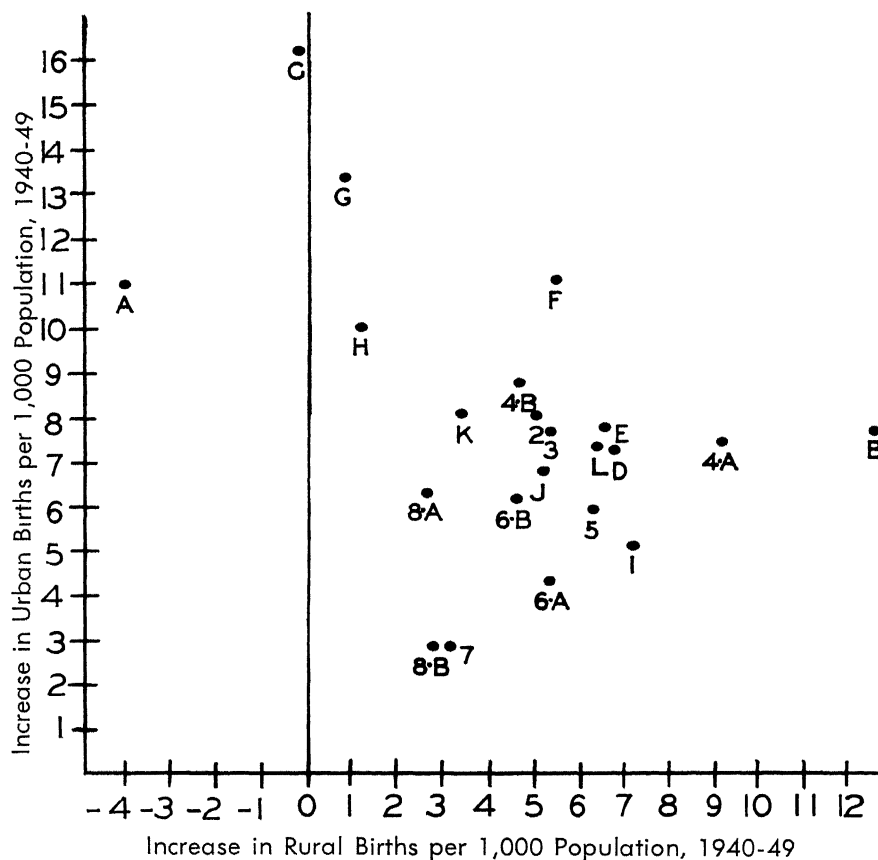
The B. A. E. farm operator family level of living indices for 1940 and 1950 were plotted against the 1940 and 1949 rural birth rates in an effort to see how the rural birth rates were related to the degree of prosperity among farmers during the decade.<sup>11</sup> An examination of Figure 3 shows a negative relationship of  $-.66$  between the birth rate and the level of living of farm operators for the year 1940. This correlation would seem to indicate that the higher prosperity had a negative affect on the number of children born. Thus Area L with the lowest farm operator level of living index of 56 in 1940, also had a high

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<sup>11</sup>Hagood, Margaret J., Farm-operator Family Level-o-Living for Counties of the United States, 1930, 1940, 1945, and 1950. Bureau of Agricultural Economics, Washington, D. C., May 1952.

rural birth rate at the beginning of the decade. On the other hand, Area B, with one of the highest farm operator level of living indices in 1940, 138, had one of the lowest rural birth rates.

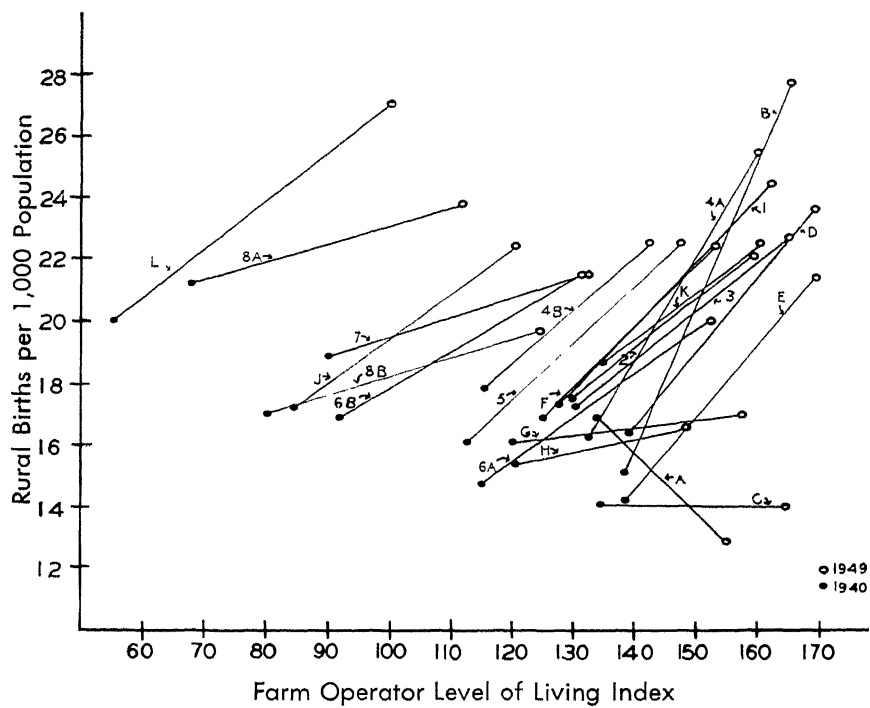
In 1950, however, this affect seems to be nullified in the lack of correlation shown by the very low  $r$  of  $-.18$ . There seemed, then, to be other factors affecting birth rates in as much as the 1950 rural birth rates, with the exception of two areas, increased as did levels of living.



**Fig. 2.—Increase in Rural Crude Birth Rate in Relation to Increase in Urban Birth Rate, 1940-1949, by Economic Areas**

Examination of the 1949 dots in the rural reveals no real clear cut linear relationship ( $r = -.18$ ) in 1950. Rural birth rates in 1950 appear to be almost entirely independent of rural prosperity as indicated by farm operator levels of living. While all economic areas experienced

an increase in farm levels of living during the ten year period, this increase did not uniformly decrease the birth rate or seem to be connected in a general way with the changes in their respective birth rates. One area, A, underwent a loss in the rural birth rate from 16.9 in 1940 to 12.9 in 1949 while its level of living rose considerably. In addition, the farm operator level of living for Area 8b, one of the more rural areas, rose from 80 to 124, an improvement of 55 percent, whereas the birth rate rose only from 17.0 to 19.8 in the decade. The increase in the birth rate for Area B was the largest, however, from 15.2 to 27.8 but the improvement in farm operator level of living, which was already high, improved only 20 percent. Area C experienced approximately the same change in farm operator level of living as Area B (22 percent), but had practically no change in birth rate.



**Fig. 3.—Increase in Rural Crude Birth Rate, 1940 to 1949, in Relation to Increase in Farm Operator Level of Living Index, 1940-1950, by Economic Areas**

When analysis of Figure 3 is divided according to metropolitan and non-metropolitan areas some differences are found. In 1940 a consistent negative correlation was found in both metropolitan and non-metropolitan areas.

In 1950 there appeared a distinct difference between the two types of areas. The metropolitan areas had an  $r$  of  $-.30$  while the correlation in the non-metropolitan was a  $+.33$ . In a similar study in Wisconsin it was found that "the forces associated with urbanization and high level of living were reinforcing each other in producing a rise in the rural birth rate."<sup>12</sup> The positive correlation in the non-metropolitan areas would seem to agree with the Wisconsin findings but the negative  $r$  of the metropolitan areas does not.

In light of the negative correlation it is not possible to generalize that in economic areas in Ohio with the highest farm operator levels of living a rise in prosperity was accompanied by a greater rise in rural birth rate. Nor is it feasible to say that urbanization and prosperity reinforce each other in producing a rise in the rural birth rate as was the case in Wisconsin. In Ohio neither degree of urbanization nor degree of farm prosperity seem to contain forces making for increase in rural birth rates. Neither do these two factors explain the difference in the amount and direction of change that took place in the urban-rural differential in the economic areas. No significant relationship resulted when these changes were plotted against the 1940-1950 change in farm operator level of living index.

#### DEATH RATES, 1940-1949

Compared with birth rates, the death rates show little change for the decade, the crude death rate for the state as a whole in 1940 being 11.4 and for 1949, 10.1 per 1,000 inhabitants.

In Ohio rural death rates are generally lower than urban. In 1940, however, six of the 22 economic areas had a higher rural than urban death rate. By 1949 the rural rates were lower than the urban except for two of the non-metropolitan areas. The rates for metropolitan areas are lower than those for non-metropolitan areas for both 1940 and 1949. This relation holds for total, urban, and rural rates in both years.

The crude urban death rates for the state were reduced slightly from 11.3 per 1,000 population in 1940 to 10.9 in 1949. The largest

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<sup>12</sup>Hagood, Margaret J., and Sharp, Emmit F., *op. cit.* p. 18.

change occurred in the rural death rates for the decade, a change from 11.6 to 8.9. The greatest changes in the rural death rate occurred in the metropolitan areas. The change in these areas was from 10.9 in 1940 to 7.1 in 1949, or 3.8. The change in the non-metropolitan areas was only 1.9, from 11.9 in 1940 to 10.0 in 1949, not much greater than the decrease in the death rate for the state as a whole.

It seems possible that the change in the rate may be partly explained in terms of the difference in the age composition of the economic areas. The lower rural rates occurring in the metropolitan areas suggest that there may be a preponderance of younger persons in rural places near cities which acts to reduce the death rate in these areas. In the more rural non-metropolitan areas, where migration has had the effect of leaving larger proportions of older persons, the rural rates have decreased only slightly. It is unknown how much of this slight decrease may also be due to the movement of retired farmers to small towns in the non-metropolitan areas.

On the whole the smallest changes in the rural death rates between 1940 and 1949 took place in the economic areas which suffered the largest losses in rural population due to migration.

### **CHANGE IN POPULATION THROUGH NET MIGRATION, 1940-1950**

Births in Ohio exceeded deaths by about twice with a resulting natural increase of 795,545. There was a net gain of population by migration into the state of 243,470 people. Thus Ohio was able to hold all gains made through natural increase plus a large number of migrants from outside of the state with the result of a 15.0 percent increase in total population during the decade. To compare the migration of Ohio with the other 47 states, it is necessary to indicate its ranking among the 22 which had net gains through migration between 1940 and 1950 (the remaining 26 states had net losses). Ohio ranked thirteenth in the percentage of the actual increase that derived from migration and ninth in proportion of the increase due to natural increase.

It must be stressed that this discussion of migration for the state deals only with the net difference between the actual increase in population and that due to the natural increase between 1940 and 1950. This shows the difference between people entering and leaving Ohio during the decade and not the actual interchange of population between Ohio and other states. The migration considered here is of a more or less

permanent nature and does not show temporary or short term movements. The net effect of the loss due to induction of residents into the armed forces was 81,000 for the ten years.

With the data at hand intra-state migration during the decade can be more adequately discussed and for an understanding of population mobility in Ohio is probably more important than interstate migration. As an examination of Table IX shows, metropolitan areas gained population at the expense of the non-metropolitan areas which generally lost population. Three of Ohio's 11 metropolitan areas did not retain all of their natural increase. These were areas H, J, and L, all border areas located in eastern and southern Ohio. By contrast only five of

**TABLE VIII. Death Rates for Economic Areas of Ohio, 1940 and 1949**

| Areas            | 1940* |       |       | 1949  |       |       |
|------------------|-------|-------|-------|-------|-------|-------|
|                  | Total | Urban | Rural | Total | Urban | Rural |
| The State        | 11.4  | 11.3  | 11.6  | 10.1  | 10.8  | 8.9   |
| Metropolitan     | 10.9  | 10.9  | 10.9  | 9.8   | 10.5  | 7.1   |
| A                | 11.5  | 12.2  | 8.0   | 10.5  | 11.8  | 5.8   |
| B                | 12.3  | 12.5  | 11.2  | 9.7   | 10.0  | 8.2   |
| C                | 12.0  | 12.0  | 11.9  | 8.9   | 11.1  | 5.6   |
| D                | 10.3  | 10.4  | 9.9   | 9.4   | 10.8  | 6.7   |
| E                | 10.2  | 10.1  | 11.2  | 9.8   | 10.0  | 7.6   |
| F                | 8.8   | 8.4   | 11.3  | 8.1   | 8.2   | 7.3   |
| G                | 11.2  | 10.5  | 12.7  | 9.1   | 10.9  | 5.9   |
| H                | 9.4   | 9.1   | 10.2  | 9.4   | 10.3  | 7.4   |
| J                | 10.2  | 10.6  | 9.9   | 10.7  | 11.9  | 9.5   |
| K                | 12.6  | 12.7  | 12.2  | 11.3  | 12.0  | 7.5   |
| L                | 10.8  | 11.9  | 10.3  | 10.4  | 12.1  | 9.6   |
| Non-metropolitan | 12.3  | 12.8  | 11.9  | 10.6  | 11.6  | 10.0  |
| 1                | 12.0  | 13.7  | 11.3  | 10.5  | 10.9  | 10.3  |
| 2                | 12.4  | 12.6  | 12.3  | 10.9  | 12.0  | 9.8   |
| 3                | 12.8  | 13.6  | 12.2  | 11.0  | 12.4  | 10.0  |
| 4a               | 12.0  | 11.2  | 13.2  | 10.0  | 9.9   | 10.1  |
| 4b               | 11.8  | 11.6  | 12.0  | 10.0  | 11.3  | 9.1   |
| 5                | 11.9  | 12.1  | 11.6  | 9.9   | 11.6  | 8.6   |
| 6a               | 12.7  | 13.3  | 12.2  | 11.1  | 12.3  | 10.4  |
| 6b               | 12.2  | 12.8  | 11.8  | 14.5  | 12.0  | 10.7  |
| 7                | 12.7  | 13.4  | 12.5  | 10.5  | 13.4  | 9.8   |
| 8a               | 12.0  | 13.5  | 11.0  | 10.1  | 11.5  | 9.3   |
| 8b               | 13.0  | 15.5  | 12.2  | 11.6  | 11.5  | 11.6  |

\*Proportion of rural and urban deaths for 1940 were estimated by a formula developed by Dr. Henry Shryock, U. S. Bureau of the Census.

the 11 non-metropolitan areas experienced gains in net migration, these were 3, 4a, 4b, 5, and 6a. These areas are all clustered around several large metropolitan areas. The 13 economic areas which had net gains through migration form a diagonal across the state, from the southwest to the northeast, except for metropolitan Area A, the Toledo area, which is in the northwestern corner of the state, on Lake Erie. This combined group of areas had a total population growth of 939,571 between 1940 and 1950, which was 90.4 percent of the state's total population increase of 1,039,015 during the period. Migration into these areas contributed 359,867 to their population increase, or 34.6 percent of the total growth. The remainder of the growth is due to the excess of births over deaths, the annual rate of natural increase averaging about nine per 1,000 population.

**TABLE IX. Births, Deaths and Net Migration, Economic Areas of Ohio, 1940-1950**

| Areas            | Population<br>April 1, 1940 | Births<br>April 1940<br>to<br>April 1950 | Deaths<br>April 1940<br>to<br>April 1950 | Net<br>migration<br>1940-50 | Population<br>April 1950 |
|------------------|-----------------------------|------------------------------------------|------------------------------------------|-----------------------------|--------------------------|
| The State        | 6,907,612                   | 1,594,100                                | 798,555                                  | 243,470                     | 7,946,627                |
| Metropolitan     | 4,261,200                   | 1,003,267                                | 483,249                                  | 254,862                     | 5,036,080                |
| A                | 344,333                     | 77,539                                   | 41,898                                   | 15,577                      | 395,551                  |
| B                | 388,712                     | 95,783                                   | 48,937                                   | 67,852                      | 503,410                  |
| C                | 331,343                     | 95,685                                   | 40,660                                   | 70,965                      | 457,333                  |
| D                | 120,249                     | 30,866                                   | 13,078                                   | 9,166                       | 147,203                  |
| E                | 1,267,270                   | 281,527                                  | 137,180                                  | 53,894                      | 1,465,511                |
| F                | 339,405                     | 86,911                                   | 32,726                                   | 16,442                      | 410,032                  |
| G                | 234,887                     | 60,753                                   | 27,496                                   | 15,050                      | 283,194                  |
| H                | 372,566                     | 81,959                                   | 36,480                                   | — 1,501                     | 416,544                  |
| J                | 193,743                     | 39,079                                   | 19,445                                   | — 29,142                    | 184,235                  |
| K                | 621,987                     | 141,775                                  | 80,586                                   | 40,776                      | 723,952                  |
| L                | 46,705                      | 11,390                                   | 4,763                                    | — 4,217                     | 49,115                   |
| Non-metropolitan | 2,646,412                   | 590,833                                  | 315,306                                  | — 11,392                    | 2,910,547                |
| 1                | 280,731                     | 61,789                                   | 31,705                                   | — 8,231                     | 302,584                  |
| 2                | 393,272                     | 91,123                                   | 48,386                                   | — 2,449                     | 433,560                  |
| 3                | 412,101                     | 95,769                                   | 52,035                                   | 9,857                       | 465,692                  |
| 4a               | 190,391                     | 46,371                                   | 23,591                                   | 26,909                      | 240,080                  |
| 4b               | 205,068                     | 48,951                                   | 23,290                                   | 11,509                      | 242,238                  |
| 5                | 224,885                     | 51,693                                   | 26,536                                   | 18,173                      | 268,215                  |
| 6a               | 157,439                     | 33,459                                   | 19,365                                   | 3,697                       | 175,230                  |
| 6b               | 276,876                     | 55,573                                   | 32,730                                   | — 18,179                    | 281,540                  |
| 7                | 156,698                     | 33,243                                   | 18,513                                   | — 3,914                     | 167,514                  |
| 8a               | 187,689                     | 43,256                                   | 20,115                                   | — 30,357                    | 180,473                  |
| 8b               | 161,262                     | 29,606                                   | 19,040                                   | — 18,407                    | 153,421                  |



The net losses from migration in the nine economic areas that lost population for the decade totaled 116,397. In spite of this loss, including the net loss to the armed forces, when it is subtracted from the gain for the above 13 areas there remains a difference of 243,470, representing the net gain from other states. The loss rate for all the areas losing by out-migration was 5.6 percent of the population they had at the beginning of the decade. This migration loss rate was only three-fourths as high as the rate of gain for the gaining areas, which was 7.4 percent of their 1940 population.

The largest population gain through migration was experienced by the Dayton metropolitan area (Area C). The 70,965 net gain through migration was 21.4 percent of its 1940 population. Area B (Columbus metropolitan area) and Area 4a (non-metropolitan area adjacent to Cleveland) also had migration gain rates of over 10 percent. Areas 8a, 8b and J, in southeastern Ohio experienced the highest rates of population net loss through migration, all being over 10 percent.

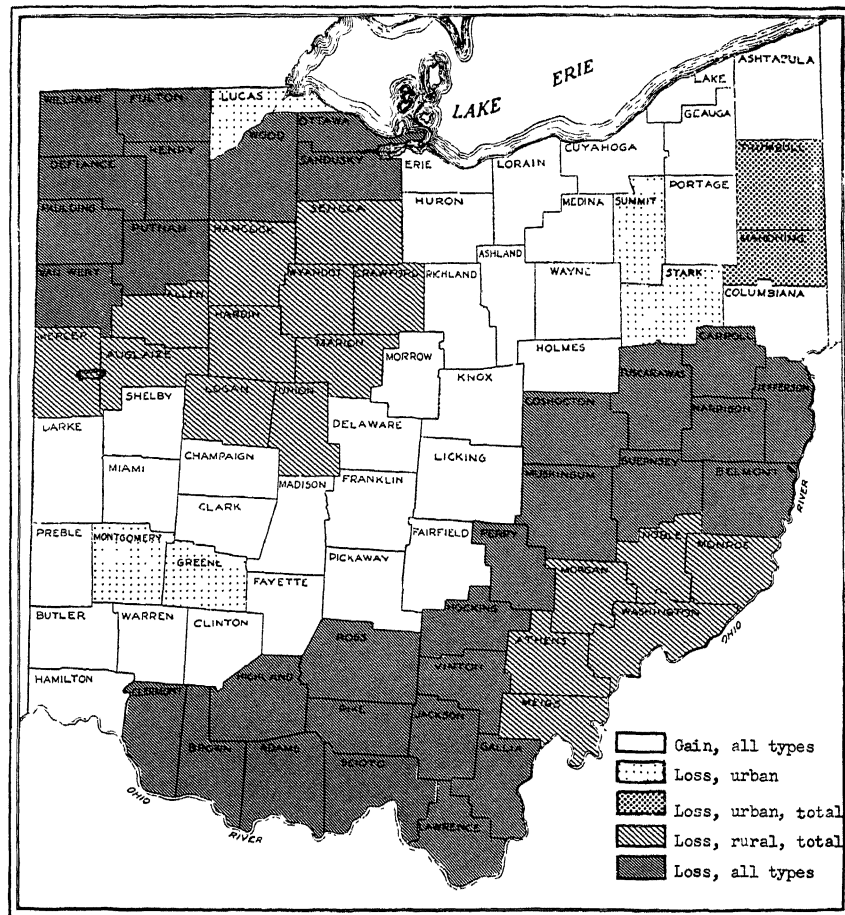
### **RURAL URBAN MIGRATION PATTERNS, 1940-1950**

When the definition of rural areas of Ohio was held constant as they were for 1940 we find a heavy migration of population into rural areas. Rural areas had a net population gain due to migration of 225,946 between 1940 and 1950 (Table X), while urban population had a net gain of only 17,524. The migration gain rate for the state was 10.6 percent of the rural population in 1940. There was an excess of rural births over rural deaths, or natural increase, amounting to 248,578 for the decade.

The pattern of increase in rural areas, however, indicates a strong suburbanization movement of population in counties which have large cities or those adjacent to such counties, rather than a general increase in rural farm population. Most of this increase comes from urban people who are so designated in the new definition of urban in the 1950 census, but to understand what has taken place in rural areas it can be seen more clearly when the 1940 definition is held constant.

The net migration increase received by the urban population of the state was only 17,524 while the rural increase due to net migration was 225,946.

The natural increase in urban areas was 546,967; that for rural was 248,578. When the increase due to migration and the natural increase are totaled urban areas increased 564,491 and rural 474,524.



**Map 2. Net Change in Rural, Urban and Total Population Due to Migration, Economic Areas, 1940-50**

Natural increase contributed 96.9 percent of the gain in the urban population while it contributed only 52.4 percent of the gain in rural. This strongly accents the suburbanization movement in Ohio during the decade. This does not include annexations to cities for which population data were not available.

The total population change due to migration for economic areas in terms of gains and losses paralleled the rural population change due to migration with the exception of Area H. This area gained rural population while it lost total population.

The picture for urban population change due to migration is quite different from that for total population change. Table XI shows five economic areas which had gained total population from migration, but at the same time suffered urban population losses from migration. These urban losses occurred in non-metropolitan Area 4b and metropolitan areas A, C, F and G. In contrast three economic areas (all non-metropolitan) which lost total population from migration gained urban population from migration during the decade, these were 1, 2, and 8b.

While it is not possible to know how many of the migrants from cities moved to urban areas near those cities and how many migrants from rural areas in the non-metropolitan areas went to cities in these same areas, this kind of movement seems likely from the net migration figures in Table XI. Another plausible explanation for the swelling of the rural population in the metropolitan areas is the movement of urban and rural population from the non-metropolitan areas to the neighboring metropolitan areas. This appears reasonable for the three southern and eastern non-metropolitan areas which experienced losses due to migration in total, urban, and rural population.

Ample substantiation for these hypotheses can be found in the decrease in the number of farms in the areas which had increases in rural population through net migration. Area C, for example, had an 18 percent loss of farms while the increase due to migration was 85 percent of the 1940 rural population. Similarly the rural population of Area E increased 61 percent, with a corresponding 33 percent loss in number of farms.

**TABLE X. Births, Deaths and Net Migration, Rural and Urban, Ohio, 1940-1950**

| Area      | Population<br>April 1, 1940 | Births<br>April, 1940-50 | Deaths<br>April, 1940-50 | Net migration<br>April, 1940-50 | Population<br>April, 1950* |
|-----------|-----------------------------|--------------------------|--------------------------|---------------------------------|----------------------------|
| The State | 6,907,612                   | 1,594,100                | 798,555                  | 243,470                         | 7,946,627                  |
| Urban     | 4,612,986                   | 1,095,845                | 548,878                  | 17,524                          | 5,177,477                  |
| Rural     | 2,294,626                   | 498,255                  | 249,677                  | 225,946                         | 2,769,150                  |

\*The 1950 population is classified according to the 1940 definitions of urban and rural population.

**TABLE XI. Change Due to Net Migration, Economic Areas  
of Ohio, Rural and Urban, 1940-50**

| Areas                     | Total population              |                                                  | Urban population              |                                                  | Rural population                         |                                                  |
|---------------------------|-------------------------------|--------------------------------------------------|-------------------------------|--------------------------------------------------|------------------------------------------|--------------------------------------------------|
|                           | Change<br>due to<br>migration | Migration<br>as percent<br>of 1940<br>population | Change<br>due to<br>migration | Migration<br>as percent<br>as 1940<br>population | Change<br>due to<br>migration<br>1940-50 | Migration<br>as percent<br>of 1940<br>population |
| The State                 | 243,470                       | 3.5                                              | 17,524                        | 0.4                                              | 225,946                                  | 9.8                                              |
| Metro-<br>politan         | 254,862                       | 6.0                                              | 5,581                         | 0.2                                              | 249,281                                  | 34.4                                             |
| A                         | 15,577                        | 4.5                                              | — 6,563                       | — 2.3                                            | 22,140                                   | 38.6                                             |
| B                         | 67,852                        | 17.5                                             | 46,852                        | 14.2                                             | 21,000                                   | 35.9                                             |
| C                         | 70,965                        | 21.4                                             | — 9,197                       | — 3.9                                            | 80,162                                   | 85.1                                             |
| D                         | 9,166                         | 7.6                                              | 1,156                         | 1.4                                              | 8,010                                    | 22.4                                             |
| E                         | 53,894                        | 4.3                                              | 17,577                        | 1.5                                              | 36,317                                   | 61.0                                             |
| F                         | 16,442                        | 4.8                                              | — 2,487                       | — 0.8                                            | 18,929                                   | 40.6                                             |
| G                         | 15,050                        | 6.4                                              | — 8,689                       | — 5.3                                            | 23,739                                   | 34.2                                             |
| H                         | — 1,501                       | — 0.4                                            | —30,702                       | —11.2                                            | 29,201                                   | 29.4                                             |
| J                         | — 29,142                      | —15.0                                            | —15,140                       | —15.9                                            | — 14,002                                 | —14.3                                            |
| K                         | 40,776                        | 6.6                                              | 13,968                        | 2.6                                              | 26,808                                   | 34.7                                             |
| L                         | — 4,217                       | — 9.0                                            | — 1,194                       | — 7.5                                            | — 3,023                                  | — 9.8                                            |
| Non-<br>metro-<br>politan | — 11,392                      | — 0.4                                            | 11,943                        | 1.1                                              | — 23,335                                 | — 1.5                                            |
| 1                         | — 8,231                       | — 2.9                                            | 9,400                         | 11.8                                             | — 17,631                                 | — 8.6                                            |
| 2                         | — 2,449                       | — 0.6                                            | 572                           | 0.3                                              | — 3,021                                  | — 1.5                                            |
| 3                         | 9,857                         | 2.4                                              | 3,732                         | 2.1                                              | 6,125                                    | 2.6                                              |
| 4a                        | 26,909                        | 14.1                                             | 15,611                        | 13.0                                             | 11,298                                   | 16.0                                             |
| 4b                        | 11,509                        | 5.6                                              | — 47                          | — 0.1                                            | 11,556                                   | 9.7                                              |
| 5                         | 18,173                        | 8.1                                              | 2,127                         | 2.0                                              | 16,046                                   | 13.6                                             |
| 6a                        | 3,697                         | 2.3                                              | — 2                           | 0.0                                              | 3,699                                    | 3.9                                              |
| 6b                        | — 18,179                      | — 6.6                                            | — 5,590                       | — 4.9                                            | — 12,589                                 | — 7.8                                            |
| 7                         | — 3,914                       | — 2.5                                            | — 2,014                       | — 6.9                                            | — 1,900                                  | — 1.5                                            |
| 8a                        | — 30,357                      | —16.2                                            | —13,347                       | —18.5                                            | — 17,010                                 | —14.7                                            |
| 8b                        | — 18,407                      | —11.4                                            | 1,501                         | 4.0                                              | — 19,908                                 | —16.1                                            |

### MIGRATION: AGRICULTURAL FACTORS<sup>13</sup>

The strong trend of movement of population toward the rural areas located near-by highly urban areas in Ohio indicates that the factors in intra-state migration are a result of the agricultural and industrial developments over a longer period of time than the decade.

<sup>13</sup>Data on agricultural factors were derived from the U. S. Census of Agriculture, 1950 for Ohio, Vol. 1, part 3, and from the preliminary reports of the United States Census of Agriculture, for 1950.

In contrast to the kinds of "pushes" and "pulls" operating on a population in a state with a larger proportion of rural people the factors in the kind of migration which took place in Ohio seem to take on different aspects.

For one thing, Ohio has had an urban population more than equal to its rural population for almost half a century. The large number of metropolitan areas comprising 100,000 or more persons have existed since well before World War II, and these areas have been attracting the rural farm population by means of job opportunities and higher levels of living since the urban development of the state began. While the number of farms in Ohio has continued to decline in the past decade, the trend of the past ten years represents only a late stage in a development which was already well under way by 1940. There has been the usual rural to urban migration as is shown in the non-metropolitan areas but also there has occurred the event which seems to be peculiar to the decade under discussion. This event may be called the reaching of a "saturation point" of urban areas, and the overflow of resident non-farm population into the adjacent rural metropolitan and non-metropolitan areas.

An analysis of several agricultural variables serve to explain the agricultural forces in the movement of rural farm population. The trend in agricultural factors in Ohio corresponds in most respects to that of the same factors in other states, however, the preponderance of suburbanization in metropolitan areas tends to affect, in some instances, the way they are related to population movements.

#### **REDUCTION IN NUMBER OF FARMS**

From the available data it is known that the decade reflects a movement away from farms in the number of farm-operator families. The reduction in the number of farms varied in non-metropolitan areas from 9 to 23 percent with an average drop of 13.7 percent. In metropolitan areas the range was from four to 33 percent with an average of —18.9 percent. The reduction averaged about 15 percent for the state as a whole.

In addition, increased mechanization of farms resulted in a reduction in the need for hired farm labor. This decrease in hired farm workers can be inferred from the reduction in farm wage expenditure by nearly 30 percent between 1939 and 1949, after allowances are made for the increase in farm wage rates.

**TABLE XII. Number of Farms, by Economic Areas of Ohio,  
1940-1945 and 1950**

| Area             | Number of farms |         |         | Percent change |         |         |
|------------------|-----------------|---------|---------|----------------|---------|---------|
|                  | 1940            | 1945    | 1950    | 1940-45        | 1945-50 | 1940-50 |
| The State        | 233,783         | 220,575 | 199,359 | — 5.6          | — 9.7   | —14.7   |
| Metropolitan     | 44,788          | 41,449  | 36,341  | — 7.5          | —12.3   | —18.9   |
| A                | 2,403           | 2,237   | 2,042   | — 6.9          | — 8.7   | —15.0   |
| B                | 3,513           | 3,121   | 2,641   | —11.2          | —15.4   | —24.8   |
| C                | 6,327           | 5,901   | 5,173   | — 6.7          | —12.3   | —18.2   |
| D                | 2,926           | 2,718   | 2,471   | — 7.1          | — 9.1   | —15.5   |
| E                | 4,101           | 3,849   | 2,767   | — 6.1          | —28.1   | —32.5   |
| F                | 2,986           | 2,881   | 2,461   | — 3.5          | —14.6   | —17.6   |
| G                | 4,707           | 4,369   | 3,887   | — 7.2          | —11.0   | —17.4   |
| H                | 6,685           | 7,215   | 6,439   | 7.9            | —10.8   | — 3.7   |
| J                | 5,476           | 4,478   | 4,172   | —18.2          | — 6.8   | —23.8   |
| K                | 2,866           | 2,236   | 2,133   | —22.0          | — 4.6   | —25.6   |
| L                | 2,798           | 2,444   | 2,155   | —12.6          | —11.8   | —23.0   |
| Non-metropolitan | 188,995         | 179,126 | 163,018 | — 5.2          | — 9.0   | —13.7   |
| 1                | 24,212          | 22,689  | 21,583  | — 6.3          | — 4.9   | —10.9   |
| 2                | 26,351          | 24,837  | 23,979  | — 5.7          | — 3.5   | — 9.0   |
| 3                | 28,968          | 28,300  | 26,052  | — 2.3          | — 7.9   | —10.1   |
| 4a               | 7,440           | 6,876   | 6,492   | — 7.6          | — 5.6   | —12.7   |
| 4b               | 14,381          | 13,793  | 12,673  | — 4.1          | — 8.1   | —11.9   |
| 5                | 14,254          | 13,710  | 11,096  | — 3.8          | —19.1   | —22.2   |
| 6a               | 12,233          | 11,878  | 10,929  | — 2.9          | — 8.0   | —10.7   |
| 6b               | 17,355          | 16,210  | 14,052  | — 6.6          | —13.3   | —19.0   |
| 7                | 15,226          | 14,826  | 13,565  | — 2.6          | — 8.5   | —10.9   |
| 8a               | 12,258          | 11,953  | 10,058  | — 2.5          | —15.9   | —17.9   |
| 8b               | 16,317          | 14,054  | 12,539  | —13.9          | —10.8   | —23.2   |

By 1950 there were less farms in Ohio than in 1940 in every economic area. In the non-metropolitan areas the reduction was greatest in the poorer eastern and southeastern areas 23.2 percent in Area 8b, 22.2 percent in Area 5, 19.0 percent in Area 6b, and 17.9 percent in Area 8a. Decreases in the other non-metropolitan areas ranged from 9.0 percent in Area 2 to 12.7 percent in Area 4a. The largest decreases in number of farms occurred not in the non-metropolitan areas, however, but in the metropolitan areas, with Area E (Cleveland metropolitan area) undergoing a reduction of 32.5 percent, and Area K (Cincinnati metropolitan area) 25.6 percent.

The state as a whole experienced more than 66 percent of its reduction in number of farms during the last half of the decade. The same kind of difference holds for the reduction in farms during the two halves of the decade for both metropolitan and non-metropolitan areas, even though the actual rate of decrease for metropolitan areas is higher for both five year periods than the rate for non-metropolitan areas.

It is likely that there are several important forces affecting the reduction in the number of farms. It may be postulated that some of these forces are different between metropolitan and non-metropolitan areas. In metropolitan areas the exodus of urban people to the suburban areas has changed the use of much of the land from farms into residential areas either subdivisions or individual residences and industrial areas. In non-metropolitan areas the reduction seems to be more related to the enlargement of the size of farm units. This parallels the increased level of living and the decrease in rural population.

The greater reduction in number of farms in all areas of Ohio after World War II can also be interpreted in terms of the impetus which the movement already under way was given by the general economic prosperity in this country and the resulting employment opportunities offered by large metropolitan areas during the post war period.

Improved opportunities for urban work has attracted many rural people. Improved farm prosperity has enabled better farmers to enlarge their farms by buying out those wishing to leave. Such reasoning is only hypothetical but appears to have plausible basis in the data.

#### **RISE IN FARM LEVELS OF LIVING**

For Ohio the average farm operator level of living index in 1950 was 148, which means that the farm level of living in the state was about 50 percent better than the United States average in 1945\* (index of 100). The average in 1950 for the United States from the same index was 122. Between 1940 and 1950 the index for Ohio increased 31 percent (Table XIII).

These changes for the state did not occur evenly. Largest gains during the decade were made by those areas which had low levels in 1940. In 1940 the indexes of western Ohio counties averaged about 130 or 17 index points above the state average of 113, whereas the southeastern counties indexes averaged about 88 or 25 points below the average level of living for the state. By 1950 we find that although the western part of the state still enjoyed the highest levels this difference

had been considerably reduced. Gains for the decade in western counties were about 25 index points; for southeastern counties the gains ranged from 43 to 65 points.

During the period 1940 to 1945 the western and northeastern parts of the state gained quite rapidly but from 1945 to 1950 improved only very little. Southeastern Ohio however, had, for the most part, greater gains in the five year period following the war.

**TABLE XIII. Average County Farm Operator Family Level of Living Indexes, Economic Areas of Ohio, 1940, 1945, 1950**

(U. S. county average for 1945 equals 100)

| Areas            | Average index value |      |      | Percent change |         |         |
|------------------|---------------------|------|------|----------------|---------|---------|
|                  | 1940                | 1945 | 1950 | 1940-45        | 1945-50 | 1940-50 |
| The State        | 113                 | 134  | 148  | 18.6           | 10.4    | 31.0    |
| Metropolitan     | 119                 | 140  | 151  | 17.6           | 7.9     | 26.9    |
| A                | 129                 | 145  | 155  | 12.4           | 6.9     | 20.2    |
| B                | 138                 | 159  | 166  | 15.2           | 4.4     | 20.3    |
| C                | 134                 | 155  | 164  | 15.7           | 5.8     | 22.4    |
| D                | 138                 | 159  | 169  | 15.2           | 6.3     | 22.5    |
| E                | 138                 | 160  | 169  | 15.9           | 5.6     | 22.5    |
| F                | 125                 | 149  | 153  | 19.2           | 2.7     | 22.4    |
| G                | 120                 | 142  | 157  | 18.3           | 10.6    | 30.8    |
| H                | 121                 | 140  | 148  | 15.7           | 5.7     | 22.3    |
| J                | 84                  | 106  | 121  | 26.2           | 14.2    | 44.0    |
| K                | 134                 | 159  | 159  | 18.7           | 0.0     | 18.7    |
| L                | 56                  | 68   | 100  | 21.4           | 47.1    | 78.6    |
| Non-metropolitan | 109                 | 129  | 145  | 18.3           | 12.4    | 33.0    |
| 1                | 128                 | 153  | 162  | 19.5           | 5.9     | 26.6    |
| 2                | 130                 | 156  | 161  | 20.0           | 3.2     | 23.8    |
| 3                | 131                 | 154  | 165  | 17.6           | 7.1     | 26.0    |
| 4a               | 133                 | 156  | 160  | 17.3           | 2.6     | 20.3    |
| 4b               | 116                 | 137  | 143  | 18.1           | 4.4     | 23.3    |
| 5                | 113                 | 134  | 147  | 18.6           | 9.7     | 30.1    |
| 6a               | 113                 | 138  | 153  | 22.1           | 10.9    | 35.4    |
| 6b               | 92                  | 110  | 132  | 19.6           | 20.0    | 43.5    |
| 7                | 90                  | 110  | 133  | 22.2           | 20.9    | 47.8    |
| 8a               | 68                  | 77   | 112  | 13.2           | 45.5    | 64.7    |
| 8b               | 80                  | 93   | 124  | 16.2           | 33.3    | 55.0    |



Increases of over 40 percent occurred in those economic areas with levels under 100 in 1940. These gains occurred in metropolitan areas J and L and in non-metropolitan areas 6b, 7, 8a, and 8b. Increases were lowest in the southwest-to-northeast diagonal of metropolitan areas across the state which includes all except areas A, L, and J.

By examination of Tables XII and XIII, when those economic areas which had changes in level of living of over 30 percent are considered, there appears to be a fairly close relationship between those areas with the most rapidly increasing level of living and those with the greatest reduction in number of farms. Of the nine areas with over 30 percent increase in level of living six of these areas also are well above average in the reduction in the number of farms.

In relating the factors of change in number of farms with the percentage change in level of living of farm operators by economic areas in Ohio we find that the relationships are below the five percent level of significance. The correlations tended to be negative. For all the economic areas the correlation as worked out was  $r = -.21$ . For metropolitan areas  $r = -.16$  and for non-metropolitan areas the correlation was larger,  $r = -.51$ .

### INCREASE IN FARM MECHANIZATION

The number of tractors in Ohio increased from 89,999 in 1940 to 182,596 in 1950 or 102.9 percent. If the rate of increase in tractors offers a fair index of farm mechanization, we find a negative linear relationship of  $-.63$  between mechanization as indicated by the increase in tractors on farms and rural population change through migration in Ohio. This correlation corroborates the observed fact that rural gains in population in all areas were heaviest where the lowest degree of increase in farm mechanization occurred. Most of these areas were metropolitan. This relationship, therefore, would appear to be heavily weighted by the movement of urban people into the rural parts of metropolitan areas. In these areas rural population increased but farm tractors increased only slightly.

Taken separately the metropolitan areas had a correlation of  $-.73$  between percentage increase in tractors on farms and percentage change in rural population through migration, while the non-metropolitan areas had a correlation of  $-.64$ . The correlation of  $-.64$  for non-metropolitan areas shows that there is a significant negative relationship between mechanization and rural population change by migration. Here there were notable increases in the number of tractors while rural population decreased or else increased but little.

**TABLE XIV. Farms Reporting Tractors and Number of Tractors  
on Farms, Economic Areas of Ohio**

| Areas                     | Farms reporting tractors |          |                  |         | Tractors on farms |          |                  |         |
|---------------------------|--------------------------|----------|------------------|---------|-------------------|----------|------------------|---------|
|                           | 1940                     | 1950     | Increase 1940-50 |         | 1940              | 1950     | Increase 1940-50 |         |
|                           |                          |          | Number           | Percent |                   |          | Number           | Percent |
| The State                 | 83,265                   | 127,506* | 44,241           | 53.1    | 89,999            | 182,596* | 92,597           | 102.9   |
| Metro-<br>politan         | 14,695                   | 21,772   | 7,077            | 48.2    | 15,881            | 29,622   | 13,741           | 86.5    |
| A                         | 1,169                    | 1,457    | 288              | 24.6    | 1,320             | 2,127    | 807              | 61.1    |
| B                         | 1,476                    | 1,691    | 215              | 14.6    | 1,662             | 2,790    | 1,128            | 67.9    |
| C                         | 2,987                    | 3,578    | 591              | 19.8    | 3,182             | 5,234    | 2,052            | 64.5    |
| D                         | 1,336                    | 1,814    | 478              | 35.8    | 1,421             | 2,632    | 1,211            | 85.2    |
| E                         | 1,628                    | 1,993    | 365              | 22.4    | 1,805             | 2,814    | 1,009            | 55.9    |
| F                         | 944                      | 1,545    | 601              | 63.7    | 998               | 1,880    | 882              | 88.4    |
| G                         | 1,456                    | 2,667    | 1,211            | 83.2    | 1,569             | 3,635    | 2,066            | 131.7   |
| H                         | 2,191                    | 3,822    | 1,631            | 74.4    | 2,304             | 4,463    | 2,159            | 93.7    |
| J                         | 641                      | 1,714    | 1,073            | 167.4   | 670               | 2,020    | 1,350            | 201.5   |
| K                         | 776                      | 1,080    | 304              | 39.2    | 854               | 1,540    | 686              | 80.3    |
| L                         | 91                       | 411      | 320              | 351.6   | 96                | 487      | 391              | 407.3   |
| Non-<br>metro-<br>politan | 68,570                   | 105,734  | 37,164           | 54.2    | 74,118            | 152,974  | 78,856           | 106.4   |
| 1                         | 14,469                   | 17,504   | 3,035            | 21.0    | 15,909            | 27,492   | 11,583           | 72.8    |
| 2                         | 13,799                   | 18,027   | 4,228            | 30.6    | 14,928            | 27,664   | 12,736           | 85.3    |
| 3                         | 15,141                   | 19,722   | 4,581            | 30.3    | 16,442            | 30,857   | 14,415           | 87.7    |
| 4a                        | 3,838                    | 5,144    | 1,306            | 34.0    | 4,265             | 8,043    | 3,778            | 88.6    |
| 4b                        | 4,709                    | 8,660    | 3,951            | 83.9    | 5,010             | 12,111   | 7,101            | 141.7   |
| 5                         | 4,781                    | 8,023    | 3,242            | 67.8    | 5,062             | 10,452   | 5,390            | 106.5   |
| 6a                        | 3,354                    | 7,123    | 3,769            | 112.4   | 3,564             | 9,626    | 6,062            | 170.1   |
| 6b                        | 2,496                    | 6,919    | 4,423            | 177.2   | 2,610             | 8,478    | 5,868            | 224.8   |
| 7                         | 3,602                    | 7,316    | 3,714            | 103.1   | 3,815             | 9,386    | 5,571            | 146.0   |
| 8a                        | 1,105                    | 3,285    | 2,180            | 197.3   | 1,182             | 4,089    | 2,907            | 245.9   |
| 8b                        | 1,276                    | 4,011    | 2,735            | 214.3   | 1,331             | 4,776    | 3,445            | 258.8   |

\*Source: The U. S. Census of Agriculture, Preliminary Reports. In the totals the preliminary reports reported 50 tractors more than shown here. On retotaling census reports their total seemed to be in error.

All the areas with gains in rural population of less than 15 percent were non-metropolitan, and had more than 90 percent increase in tractors on farms, except for areas 1, 2, and 3 which had increases in tractors of less than 90 percent. These three areas were already highly mechanized in 1940. Areas in southwestern Ohio show the greatest increases but these areas were the least mechanized.

Dairying is a major farm enterprise in many states. In Ohio it has ranked first for several years. In 1950 Ohio farmers received 26 percent of their income from this source. For these reasons it is used here for comparative purposes as an element indicating mechanization in agriculture.

Over-all in the state the number of milking machines, as shown in the preliminary reports of the agriculture census, changed from 20,059 in 1945 to 39,859 in 1950. This was an increase of 50.9 percent in the number of milking machines in the five year period. No count was taken before 1945 by the United States Census of Agriculture.

In 1950, 39,859 farms reported milking machines and they represented 28 percent of all farms with cows kept for milk (Table XV). There was a loss for the state of farms reporting milk cows between 1940 and 1950 of 6.3 percent. All metropolitan areas with the exception of one, Area L, showed a decrease in number of milk cows. This decrease averaged 18.0 percent. The loss of milk cows in the non-metropolitan areas, however, was only 4.1 percent. Five non-metropolitan areas had increases; these were Areas 4b, 6a, 7, 8a, and 8b.

There was little difference between the proportion of farms with milk cows reporting milking machines for the metropolitan areas (26.0 percent) and the non-metropolitan areas (28.3). The areas with the smallest percent of milking machines were found in south and south-eastern Ohio in Area L with 6.1 percent, Area 8a with 9.0 percent, Area 8b with 13.7 percent and Area 7 with 14.2 percent.

#### **CHANGES IN USE OF HIRED LABOR IN FARMING**

The change in the use of hired labor on farms in Ohio was not so great as was found in some states, but a similar trend appeared. In 1939 there were 35.4 percent of the farms in Ohio reporting cash wage expenditures. The next agriculture census in 1944 showed 43.1 percent and by 1949 it had increased to 47.0 percent, or close to half of the farms had used hired labor in the state.

At the same time the percent change in wages paid when adjusted for changes in wage rates was found to be 27.8 percent less in 1949 than in 1939. This means that more farmers used hired help but the amount of help used by them decreased by nearly 28 percent during the war decade. This data indicates the use by more farmers of seasonal, part-time labor and a decrease in full time workers.

The increase in the number of farmers using hired help is undoubtedly associated with mechanization and the replacement of family workers as members of farm families went into military service and industrial work. Also, as in other states, it would seem that the better financial position of farmers during that period contributed to making it possible for more farmers to afford hiring part-time workers.

**TABLE XV. Cows Kept for Milk 1950, Percent Change in Cows Kept for Milk 1940-1950, and Percentage of Farms with Milk Cows Reporting Milking Machines 1950, Economics Areas of Ohio**

| Areas            | Cows kept for milk             |                      |                          |                                  | Milking machines, 1950    |                                                    |
|------------------|--------------------------------|----------------------|--------------------------|----------------------------------|---------------------------|----------------------------------------------------|
|                  | Farms reporting milk cows 1950 | Percent of all farms | Number of milk cows 1950 | Percent change in number 1940-50 | Number of farms reporting | Farms reporting as percent of farms with milk cows |
|                  | Number                         |                      |                          |                                  |                           |                                                    |
| The State        | 142,584                        | 71.5                 | 873,702                  | — 6.3                            | 39,859                    | 28.0                                               |
| Metropolitan     | 20,992                         | 57.8                 | 125,348                  | —17.6                            | 5,442                     | 25.9                                               |
| A                | 728                            | 35.7                 | 2,424                    | —37.7                            | 86                        | 11.8                                               |
| B                | 1,476                          | 55.9                 | 10,639                   | —24.1                            | 462                       | 31.3                                               |
| C                | 3,089                          | 59.7                 | 17,866                   | —21.5                            | 873                       | 28.3                                               |
| D                | 1,674                          | 67.7                 | 11,696                   | — 9.2                            | 581                       | 34.7                                               |
| E                | 939                            | 33.9                 | 3,566                    | —39.7                            | 130                       | 13.8                                               |
| F                | 1,006                          | 40.9                 | 4,851                    | —37.4                            | 195                       | 19.4                                               |
| G                | 2,500                          | 64.3                 | 17,092                   | — 9.6                            | 956                       | 38.2                                               |
| H                | 3,765                          | 58.5                 | 25,445                   | —17.9                            | 1,078                     | 28.6                                               |
| J                | 3,258                          | 78.1                 | 21,135                   | — 3.5                            | 790                       | 24.2                                               |
| K                | 1,085                          | 50.9                 | 5,281                    | —35.5                            | 201                       | 18.5                                               |
| L                | 1,472                          | 68.3                 | 5,353                    | 6.7                              | 90                        | 6.1                                                |
| Non-metropolitan | 121,592                        | 74.6                 | 748,354                  | — 4.1                            | 34,417                    | 28.3                                               |
| 1                | 15,280                         | 70.8                 | 82,144                   | —16.6                            | 5,466                     | 35.8                                               |
| 2                | 18,541                         | 77.3                 | 120,879                  | — 4.6                            | 6,148                     | 33.2                                               |
| 3                | 19,362                         | 74.3                 | 128,074                  | — 6.6                            | 6,819                     | 35.2                                               |
| 4a               | 4,105                          | 63.2                 | 27,042                   | —14.0                            | 1,509                     | 36.8                                               |
| 4b               | 9,739                          | 76.8                 | 74,451                   | 3.9                              | 3,387                     | 34.8                                               |
| 5                | 7,867                          | 70.9                 | 57,131                   | —15.3                            | 2,858                     | 36.3                                               |
| 6a               | 8,335                          | 76.3                 | 55,874                   | 3.9                              | 2,533                     | 30.4                                               |
| 6b               | 10,983                         | 78.2                 | 68,591                   | — 1.0                            | 2,235                     | 20.3                                               |
| 7                | 10,203                         | 75.2                 | 52,022                   | 7.6                              | 1,446                     | 14.2                                               |
| 8a               | 7,245                          | 72.0                 | 30,313                   | 10.7                             | 651                       | 9.0                                                |
| 8b               | 9,932                          | 79.2                 | 51,833                   | 6.1                              | 1,365                     | 13.7                                               |

Ohio differed from some states, as for example Wisconsin, however, in that the proportion of farms using hired labor in Ohio continued to increase from 1945 to 1950 whereas in Wisconsin there was a noticeable decline from 1944 to 1950.<sup>14</sup> The factors which drew rural people away from farms in Ohio during the first half of the decade continued to operate with the emphasis changing from military more to industrial. This seemed to keep many of those persons coming back from military service from returning to their home and farm work.

In terms of amount of farm labor hired, all areas of the state except 8a had reductions of from 10.1 to 49.8 percent. Farmers in metropolitan areas had a reduction of 35.4 percent while those in non-metropolitan areas declined 24.6 percent.

In southeastern Ohio in addition to the four percent gain of Area 8a the other areas of that region were under the average for the state in the amount that they reduced the farm labor used. This region had the least change. Areas with the greatest change were the metropolitan areas C, D and K in southwestern Ohio and E in the northeast. In non-metropolitan areas in the northeast Area 5, and Areas 1, 2, and 3 in the western part of the state had the greatest reduction in the use of farm labor. These reductions paralleled roughly the mechanization pattern and decrease in the number of farms for the state.

#### VALUE OF FARM PRODUCTS SOLD

The value of farm products sold by Ohio farmers in 1939 was \$253,911,261.00. In 1949 this rose to \$711,681,492.00. However, when the 1949 values are adjusted to those of 1939 the proportionate increase in value for products sold for the state is 7.8 percent (Table XVII).

The metropolitan areas had a reduction in production of 2.1 percent while non-metropolitan areas increased production by 9.8 percent, thus emphasizing the change occurring in land use in metropolitan areas as it moves into industrial and residential uses.

The change occurring in the economic areas shows a wide degree of variation. The largest gain was in Area D (Butler County with 26.4 percent) which had only an average reduction in number of farms and which had a very high level of living in 1940. The next largest gain was made by Area 7 (southwestern counties with 25.6), one of the

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<sup>14</sup>Hagood, Margaret J., and Sharp, Emmit F., op. cit. p. 30.

areas with the least reduction in number of farms. In this area farming is diversified, tobacco, hogs and dairy products providing the main sources of income. Both of these areas seem to be somewhat stabilized in migration patterns. Only one non-metropolitan area suffered a decrease in value of products sold; this was Area 5 in the northeastern part of the state. This is one of the non-metropolitan areas with a large decrease in the number of farms.

**TABLE XVI. Percent of Farms Reporting Expenditure for Hired Labor, 1939, 1944, and 1949 and Percent Change in Cash Wage Expenditures Adjusted for Change in Wage Rates, Economic Areas of Ohio, 1939 and 1949**

| Areas            | Percent of farms reporting cash wage expenditures |      |      | Percent change in wage expenditures, adjusted for changes in wage rates* |
|------------------|---------------------------------------------------|------|------|--------------------------------------------------------------------------|
|                  | 1939                                              | 1944 | 1949 | 1939-1949                                                                |
| The State        | 35.4                                              | 43.1 | 46.9 | —27.8                                                                    |
| Metropolitan     | 33.1                                              | 39.2 | 41.0 | —35.4                                                                    |
| A                | 42.9                                              | 50.1 | 41.0 | —20.8                                                                    |
| B                | 36.7                                              | 55.9 | 43.4 | —18.0                                                                    |
| C                | 43.2                                              | 35.3 | 57.7 | —37.1                                                                    |
| D                | 42.3                                              | 44.8 | 46.5 | —49.8                                                                    |
| E                | 37.0                                              | 28.8 | 39.7 | —45.1                                                                    |
| F                | 32.8                                              | 32.5 | 26.7 | —31.3                                                                    |
| G                | 31.3                                              | 41.0 | 42.6 | —10.1                                                                    |
| H                | 28.5                                              | 40.5 | 30.5 | —38.7                                                                    |
| J                | 22.7                                              | 38.5 | 48.0 | —16.9                                                                    |
| K                | 30.2                                              | 35.2 | 31.2 | —49.5                                                                    |
| L                | 19.4                                              | 33.2 | 33.9 | —29.9                                                                    |
| Non-metropolitan | 35.9                                              | 44.1 | 48.3 | —24.6                                                                    |
| 1                | 36.7                                              | 45.0 | 51.9 | —28.3                                                                    |
| 2                | 41.5                                              | 45.9 | 49.6 | —31.9                                                                    |
| 3                | 46.7                                              | 52.3 | 58.4 | —26.2                                                                    |
| 4a               | 42.2                                              | 43.6 | 47.6 | —19.9                                                                    |
| 4b               | 37.2                                              | 47.5 | 43.8 | —18.2                                                                    |
| 5                | 34.6                                              | 37.8 | 42.0 | —34.6                                                                    |
| 6a               | 39.9                                              | 46.5 | 52.2 | —19.4                                                                    |
| 6b               | 30.1                                              | 39.3 | 43.0 | —18.4                                                                    |
| 7                | 29.6                                              | 39.5 | 49.9 | —20.8                                                                    |
| 8a               | 20.2                                              | 38.1 | 34.5 | 4.0                                                                      |
| 8b               | 24.2                                              | 38.8 | 40.5 | —12.7                                                                    |

\*For method of adjusting data see Hagood, Margaret J. and Sharp, Emmet F., op. cit. p. 52. The 1949 index was 328 percent of the 1939 index. Indexes for Ohio are from the Department of Agricultural Economics and Rural Sociology, The Ohio State University.

On the other hand only four metropolitan areas show gains in average value of products sold, and with the exception of Area D none of the gains are over 4.0 percent. Losses are as high as 27.5 percent for Area F and 15.7 for Area E.

**TABLE XVII. Average Value of Products Sold per Farm 1949 and Percentage Change in Value of Products Sold, (Adjusted for Changes in Prices Received by Farmers) 1939-1949**

| Areas            | Average value of products sold per farm reporting 1949 | Percentage change in total value of products sold, (adjusted for price changes)* 1939-49 |
|------------------|--------------------------------------------------------|------------------------------------------------------------------------------------------|
|                  | Dollars                                                |                                                                                          |
| The State        | 1,463                                                  | 7.8                                                                                      |
| Metropolitan     | 1,318                                                  | — 2.1                                                                                    |
| A                | 1,782                                                  | 1.5                                                                                      |
| B                | 1,773                                                  | 3.9                                                                                      |
| C                | 1,690                                                  | — 0.9                                                                                    |
| D                | 1,750                                                  | 26.4                                                                                     |
| E                | 2,017                                                  | —15.7                                                                                    |
| F                | 910                                                    | —27.5                                                                                    |
| G                | 1,192                                                  | 2.9                                                                                      |
| H                | 976                                                    | — 2.9                                                                                    |
| J                | 740                                                    | — 4.6                                                                                    |
| K                | 1,355                                                  | — 4.5                                                                                    |
| L                | 482                                                    | — 1.7                                                                                    |
| Non-metropolitan | 1,493                                                  | 9.8                                                                                      |
| 1                | 1,958                                                  | 6.7                                                                                      |
| 2                | 1,887                                                  | 11.6                                                                                     |
| 3                | 2,142                                                  | 13.0                                                                                     |
| 4a               | 1,580                                                  | 3.3                                                                                      |
| 4b               | 1,449                                                  | 7.7                                                                                      |
| 5                | 1,068                                                  | —11.6                                                                                    |
| 6a               | 1,364                                                  | 16.4                                                                                     |
| 6b               | 898                                                    | 9.2                                                                                      |
| 7                | 1,147                                                  | 25.6                                                                                     |
| 8a               | 616                                                    | 16.0                                                                                     |
| 8b               | 623                                                    | 6.5                                                                                      |

\*For method of adjusting data see Hagood, Margaret J. and Sharp, Emmit F., op. cit. p. 52. The 1949 index was 260 percent of the 1939 index. Indexes for Ohio are from the Department of Agricultural Economics and Rural Sociology, The Ohio State University.

In Table XVII the data showing the average value of products sold per farm are worthy of note when one wishes to consider the relative prosperity and productivity of these economic areas for agricultural products. In the more rural or non-metropolitan sections Areas 3, 1 and 2 in that order, have the highest average productivity. Areas 8a, 8b and 6b are all considerably below average and Areas 5 and 7 are somewhat below. The metropolitan areas that fall within the non-metropolitan areas generally follow similar patterns of productivity.

When the two factors, percentage change in the adjusted farm wage expenditures and percentage change in farm products sold adjusted for price changes, are correlated for all economic areas, a very small negative correlation of  $-.29$  was found. For the metropolitan areas only, the correlation was reduced to  $-.07$  showing no relationship for these areas. However, for non-metropolitan areas the  $r$  was somewhat higher,  $-.42$ , but still not a clearly significant relationship.

These correlations would indicate that in Ohio the small increase in farm products had no corresponding increase in the use of hired farm labor. Again the negative relationship if higher would show that the increases in productivity were accomplished with less hired labor. Therefore it would seem that other factors were probably more important in determining the increase in agricultural output. The use of full-time hired farm labor then would tend to become less necessary for the maintenance of production in Ohio, a factor which would affect the migration of rural workers.

In summary the "push" elements behind rural migration in Ohio add up to a major contribution to the movement of people from rural farm to urban living.

The 15 percent reduction in number of farms means fewer farm operator families. The 7.8 percent increase in farm production accomplished with 28 percent less farm labor and the 50 percent increase in mechanization all seem to be factors in this movement.

The 31 percent improvement for the state in the way the remaining farm people live seems to be a dependent factor resulting from the others.

### **MIGRATION: INDUSTRIAL FACTORS**

Ohio's industrial growth had developed to a high degree before World War II; by 1940, 65 of its 88 counties employed 1,000 or more persons in industry and 24 counties had 5,000 or more persons working in industry. The impact of war production resulted in further expansion in manufacturing and construction. By 1950 there were



1,121,006 persons employed in manufacturing as compared with 782,972 persons in 1940. In terms of percentages, 36.6 percent of all gainfully employed persons were employed in manufacturing, while this percentage in 1940 was 33.4.

Just as it was attempted to examine relationships between migration patterns and agricultural variables in the last section, it is proposed here to look at the migration patterns as they are affected by industrial factors. Here, however, the county is used as the basic unit rather than the economic areas.

Counties with above 5,000 persons employed in manufacturing in 1940 represent the counties with relatively large industrial centers. There were 24 such counties in the state in 1940.

The coefficient of contingency for Table XIX was .56. When corrected for the effect of the broad groupings of the table, the coefficient became .88. Thus it may be concluded that counties with manufacturing centers were most successful in attracting migrants during the 1940-1950 period. Only four of the 24 counties which had over 5,000 employed workers in manufacturing had population losses of eight percent or more.

To determine the relationship between migration and employment opportunities in industrial centers, the percentage increase in total number of production workers during the decade was plotted against the change in total county population due to migration for the 24 counties having large industrial centers in 1940. Some of the counties experienced small gains in industrial workers (as low as 14 percent for Jefferson) whereas others increased much more, the largest increase

**TABLE XVIII. Percentage Distribution of Employed Persons by Industry Group, Ohio, 1940 and 1950\***

|      | Agri-<br>culture | Min-<br>ing | Con-<br>struction | Manu-<br>facturing | Trans-<br>portation,<br>communi-<br>cation<br>and other<br>public<br>utilities | Whole-<br>sale<br>and<br>retail<br>trade | Business,<br>professional,<br>and<br>entertainment<br>and<br>recreational<br>services | Others<br>and<br>not<br>re-<br>ported |
|------|------------------|-------------|-------------------|--------------------|--------------------------------------------------------------------------------|------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------|
| 1950 | 7.0              | 1.0         | 5.2               | 36.6               | 7.8                                                                            | 18.2                                     | 16.0                                                                                  | 8.2                                   |
| 1940 | 11.1             | 1.4         | 4.4               | 33.4               | 7.4                                                                            | 17.5                                     | 17.8                                                                                  | 7.2                                   |

\*Computed from U. S. Bureau of Census. U. S. Census of Population: 1950 Vol. II. Characteristics of the population, Part 15. Ohio, Chapter B, Table 31.

**TABLE XIX. Relationship of Net Change in Total Population Due to Migration, 1940-1950, to Presence of Workers Employed in Manufacturing in a County\***

| Number of<br>employed workers<br>in manufacturing<br>in 1940 | Total<br>counties | Counties with population change due<br>to migration, 1940-1950 |                                |
|--------------------------------------------------------------|-------------------|----------------------------------------------------------------|--------------------------------|
|                                                              |                   | Gain or less than<br>an 8 percent loss                         | Eight percent<br>loss or more† |
| Total                                                        | 88                | 63                                                             | 25                             |
| Less than 5,000                                              | 64                | 43                                                             | 21                             |
| 5,000 and over                                               | 24                | 20                                                             | 4                              |

\*Employment data computed from U. S. Bureau of the Census, U. S. Census of Population: 1950. Vol. II, Characteristics of population. Part 35, Ohio, Chapter B, Table 43. Migration data obtained from appendix Table A of this bulletin.

†Counties with losses of over 7.5 percent were considered as having losses of 8 percent or more.

being exhibited by Lake County, with a 112 percent gain over the decade. The relationship is positive and high (Pearsonian  $r = +.81$ ). We assume then that opportunities for industrial employment in Ohio was a strong factor in migration during the decade.

Although wage differentials among the 24 counties with large industrial centers are not included here, from the evidence presented in the Wisconsin data,<sup>13</sup> it is probable that high industrial wages in Ohio's largest manufacturing centers, or lack of them in some areas, parallels the availability of employment as a factor in migration.

These findings for the "pull" factors strongly augment the results of the analysis of agricultural factors of migration and probably explain a large part of the migration from outside the state as well as the general movement from within.

### **FUTURE POPULATION TRENDS IN OHIO**

The population growth in Ohio during the past decade can be evaluated in relationship to the distribution trends in the United States and in the East North Central Division, in which Ohio is included. On the basis of these trends in growth projections of the population into the future are possible.

<sup>13</sup>Hagood, Margaret J., and Sharp, Emmit F., op. cit. p. 34.

Errors in projection must always be anticipated, however, since many of the variables which intervene between the time of prediction and the actual occurrence of the event predicted, in this case, population growth, cannot be accounted for adequately. We are aware that economic conditions, such as depression and prosperity, cultural changes in family patterns, and rapidly accelerating technology are all components of population change that influence the precision with which past demographic trends can be projected into the future. For this reason, the projections of population presented here as prepared by the U. S. Bureau of the Census for the decade, allows for a greater range of possibilities, with a low, medium, and high series.<sup>16</sup>

Quoting from Dr. Hagood on the population growth for the nation, we observe the following:

"From a July, 1950, level of 151.8 million, the population of the United States is expected to increase to 169.4 million by 1960 under the medium assumptions. The range of what seems within the realm of likelihood is indicated by the low series prediction of 161.7 million and the high projection of 180.3 million for 1960."<sup>17</sup>

Furthermore, regional distributions are expected to persist, the East North Central Division will continue to have one-fifth of the nation's population. Again quoting from Dr. Hagood with reference to the varied rates of growth among the five states making up the East North Central Division, Ohio, Indiana, Illinois, Michigan, and Wisconsin:

"Ohio and Indiana have maintained their shares of the division's population rather steadily, Michigan has gained in its share, while Illinois' and Wisconsin's shares have been declining slightly."<sup>18</sup>

With this kind of information, including the projected populations for the nation and the major geographic divisions, and the rates of growth for the states, the projected share of the population for Ohio was arrived at. According to the medium forecast for Ohio in Table XX, Ohio's population will increase to approximately 8,913,000 in 1960. It is believed that minimum growth would approximate 8,508,000 while maximum growth would likely be 9,487,000.

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<sup>16</sup>Projections of the population by states: 1955 and 1960, Population Estimates, Current Population Reports of the United States Department of Commerce, Series P-25, No. 56, January 27, 1952.

<sup>17</sup>Hagood, Margaret J., and Sharp, Emmit F., op. cit., p. 40.

<sup>18</sup>Ibid., p. 41.

Unless the striking trend of the last decade is reversed, fringe population in rural portions of the metropolitan areas will increase more rapidly than urban population in either metropolitan or non-metropolitan areas and than rural population in the non-metropolitan areas. It is also to be expected that population concentration in the state will continue to occur in the rough diagonal of counties extending from the southwestern to the northeastern corners of the state.

An example of the error which may be introduced into projections as a result of unexpected occurrences is the effect which the proposed atomic plant to be located in Pike County could have on the population picture in the southernmost and southeastern counties.

Expansion of industry in Ohio appears to have been a very important element in the state's ability to retain all of its natural increase in the last decade. Continued expansion will assure steady growth. The reduction of farm population and number of farms in Ohio will undoubtedly continue to accompany increased levels of living for those farmers remaining especially in the southern and southeastern part of the state where levels of living are low in relation to the state as a whole. However, this may not be so in the northeastern section of the state, where agricultural production is already concentrated in a relatively small number of farms, where farmers already have a high level of living and where a decrease in the number of farms often represents loss of farm land because of industrialization and suburbanization.

**TABLE XX. Projections of Ohio's Population to 1960, July 1 Dates\***

| Year | Low       | Medium    | High      |
|------|-----------|-----------|-----------|
| 1955 | 8,345,000 | 8,534,000 | 8,767,000 |
| 1960 | 8,508,000 | 8,913,000 | 9,487,000 |

\*Source: Projections of the population by states: 1955 and 1960, Population Estimates, Current Population Reports of the U. S. Department of Commerce, Series P-25, No. 56. These projections were based on an estimate of 8,016,000 for the 1950 population. This base estimate is 69,373 over the actual 1950 population, a relatively small difference which does not invalidate the usefulness of the projections

# APPENDIX

## COUNTY TABLES

**Appendix Table A.—Total Population, Natural Increase, and Net Migration, Ohio Counties, 1940-50**

|                 | 1940<br>population | Excess of<br>births over<br>deaths | Net change<br>through<br>migration | 1950<br>population | Net change<br>through<br>migration as<br>percentage<br>of 1940<br>population |
|-----------------|--------------------|------------------------------------|------------------------------------|--------------------|------------------------------------------------------------------------------|
| Ohio            | 6,907,612          | 795,545                            | 243,470                            | 7,946,627          | 3.5                                                                          |
| Area 1, A       | 625,064            | 65,725                             | 7,346                              | 698,135            | 1.2                                                                          |
| Defiance        | 24,367             | 2,716                              | — 1,158                            | 25,925             | — 4.8                                                                        |
| Fulton          | 23,626             | 2,968                              | — 1,014                            | 25,580             | — 4.3                                                                        |
| Henry           | 22,756             | 2,245                              | — 2,578                            | 22,423             | —11.3                                                                        |
| Lucas—A         | 344,333            | 35,641                             | 15,577                             | 395,551            | 4.5                                                                          |
| Ottawa          | 24,360             | 2,839                              | 2,270                              | 29,469             | 9.3                                                                          |
| Paulding        | 15,527             | 1,445                              | — 1,925                            | 15,047             | —12.4                                                                        |
| Putnam          | 25,016             | 3,149                              | — 2,917                            | 25,248             | —11.7                                                                        |
| Sandusky        | 41,014             | 4,657                              | 443                                | 46,114             | 1.1                                                                          |
| Van Wert        | 26,759             | 2,517                              | — 2,305                            | 26,971             | — 8.6                                                                        |
| Williams        | 25,510             | 2,267                              | — 1,575                            | 26,202             | — 6.2                                                                        |
| Wood            | 51,796             | 5,281                              | 2,528                              | 59,605             | 4.9                                                                          |
| Area 2          | 393,272            | 42,737                             | — 2,449                            | 433,560            | — 0.6                                                                        |
| Allen           | 73,303             | 10,430                             | 4,450                              | 88,183             | 6.1                                                                          |
| Auglaize        | 28,037             | 2,721                              | — 121                              | 30,637             | — 0.4                                                                        |
| Crawford        | 35,571             | 3,668                              | — 501                              | 38,738             | — 1.4                                                                        |
| Hancock         | 40,793             | 3,969                              | — 482                              | 44,280             | — 1.2                                                                        |
| Hardin          | 27,061             | 2,557                              | — 945                              | 28,673             | — 3.5                                                                        |
| Logan           | 29,624             | 2,425                              | — 720                              | 31,329             | — 2.4                                                                        |
| Marion          | 44,898             | 5,327                              | — 266                              | 49,959             | — 0.6                                                                        |
| Mercer          | 26,256             | 3,268                              | — 1,213                            | 28,311             | — 4.6                                                                        |
| Seneca          | 48,499             | 5,208                              | — 729                              | 52,978             | — 1.5                                                                        |
| Union           | 20,012             | 1,514                              | — 839                              | 20,687             | — 4.2                                                                        |
| Wyandot         | 19,218             | 1,650                              | — 1,083                            | 19,785             | — 5.7                                                                        |
| Area 3, B, C, D | 1,252,405          | 163,393                            | 157,840                            | 1,573,638          | 12.6                                                                         |
| Butler—D        | 120,249            | 17,788                             | 9,166                              | 147,203            | 7.6                                                                          |
| Champaign       | 25,258             | 2,707                              | — 1,172                            | 26,793             | — 4.6                                                                        |
| Clark           | 95,647             | 11,620                             | 4,394                              | 111,661            | 4.6                                                                          |
| Clinton         | 22,574             | 1,812                              | 1,186                              | 25,572             | 5.3                                                                          |
| Darke           | 38,831             | 3,716                              | — 748                              | 41,799             | — 1.9                                                                        |
| Delaware        | 26,780             | 2,008                              | 1,490                              | 30,278             | 5.6                                                                          |
| Fayette         | 21,385             | 1,988                              | — 819                              | 22,554             | — 3.8                                                                        |
| Franklin—B      | 388,712            | 46,846                             | 67,852                             | 503,410            | 17.5                                                                         |
| Greene—C        | 35,863             | 6,239                              | 16,790                             | 58,892             | 46.8                                                                         |
| Madison         | 21,811             | 2,172                              | — 1,683                            | 22,300             | — 7.7                                                                        |
| Miami           | 52,632             | 6,589                              | 2,088                              | 61,309             | 4.0                                                                          |
| Montgomery—C    | 295,480            | 48,786                             | 54,175                             | 398,441            | 18.3                                                                         |
| Pickaway        | 27,889             | 1,745                              | — 282                              | 29,352             | — 1.0                                                                        |
| Preble          | 23,329             | 1,827                              | 1,925                              | 27,081             | 8.2                                                                          |
| Shelby          | 26,071             | 3,308                              | — 891                              | 28,488             | — 3.4                                                                        |
| Warren          | 29,894             | 4,242                              | 4,369                              | 38,505             | 14.6                                                                         |
| Area 4a, E      | 1,457,661          | 167,127                            | 80,803                             | 1,705,591          | 5.5                                                                          |
| Cuyahoga—E      | 1,217,250          | 136,266                            | 36,016                             | 1,389,532          | 3.0                                                                          |
| Erie            | 43,201             | 4,005                              | 5,359                              | 52,565             | 12.4                                                                         |
| Huron           | 34,800             | 3,470                              | 1,083                              | 39,353             | 3.1                                                                          |
| Lake—E          | 50,020             | 8,081                              | 17,878                             | 75,979             | 35.7                                                                         |
| Lorain          | 112,390            | 15,305                             | 20,467                             | 148,162            | 18.2                                                                         |
| Area 4b         | 205,068            | 25,661                             | 11,509                             | 242,238            | 5.6                                                                          |
| Ashland         | 29,785             | 2,926                              | 329                                | 33,040             | 1.1                                                                          |
| Holmes          | 17,876             | 2,557                              | — 1,673                            | 18,760             | — 9.4                                                                        |

**Appendix Table A.—Total Population, Natural Increase, and  
Net Migration, Ohio Counties, 1940-50—Continued**

|                 | 1940<br>population | Excess of<br>births over<br>deaths | Net change<br>through<br>migration | 1950<br>population | Net change<br>through<br>migration as<br>percentage<br>of 1940<br>population |
|-----------------|--------------------|------------------------------------|------------------------------------|--------------------|------------------------------------------------------------------------------|
| Medina          | 33,034             | 3,636                              | 3,747                              | 40,417             | 11.3                                                                         |
| Richland        | 73,853             | 9,439                              | 8,013                              | 91,305             | 10.8                                                                         |
| Wayne           | 50,520             | 7,103                              | 1,093                              | 58,716             | 2.2                                                                          |
| Area 5, F, G, H | 1,171,743          | 158,078                            | 48,164                             | 1,377,985          | 4.1                                                                          |
| Ashtabula       | 68,674             | 5,603                              | 4,418                              | 78,695             | 6.4                                                                          |
| Columbiana      | 90,121             | 9,890                              | — 1,091                            | 98,920             | — 1.2                                                                        |
| Geauga          | 19,430             | 2,789                              | 4,427                              | 26,646             | 22.8                                                                         |
| Mahoning—H      | 240,251            | 26,336                             | — 8,958                            | 257,629            | — 3.7                                                                        |
| Portage         | 46,660             | 6,875                              | 10,419                             | 63,954             | 22.3                                                                         |
| Stark—G         | 234,887            | 33,257                             | 15,050                             | 283,194            | 6.4                                                                          |
| Summit—F        | 339,405            | 54,185                             | 16,442                             | 410,032            | 4.8                                                                          |
| Trumbull—H      | 132,315            | 19,143                             | 7,457                              | 158,915            | 5.6                                                                          |
| Area 6a         | 157,439            | 14,094                             | 3,697                              | 175,230            | 2.3                                                                          |
| Fairfield       | 48,490             | 4,994                              | — 1,354                            | 52,130             | — 2.8                                                                        |
| Knox            | 31,024             | 2,851                              | 1,412                              | 35,287             | 4.6                                                                          |
| Licking         | 62,279             | 5,219                              | 3,147                              | 70,645             | 5.1                                                                          |
| Morrow          | 15,646             | 1,030                              | 492                                | 17,168             | 3.1                                                                          |
| Area 6b, J      | 470,619            | 42,477                             | — 47,321                           | 465,775            | —10.1                                                                        |
| Belmont—J       | 95,614             | 7,961                              | — 15,835                           | 87,740             | —16.6                                                                        |
| Carroll         | 17,449             | 1,571                              | 19                                 | 19,039             | 0.1                                                                          |
| Coshocton       | 30,594             | 2,156                              | — 1,609                            | 31,141             | — 5.3                                                                        |
| Guernsey        | 38,822             | 1,413                              | — 1,783                            | 38,452             | — 4.6                                                                        |
| Harrison        | 20,313             | 1,524                              | — 2,783                            | 19,054             | —13.7                                                                        |
| Jefferson—J     | 98,129             | 11,673                             | — 13,307                           | 96,495             | —13.6                                                                        |
| Muskingum       | 69,795             | 7,035                              | — 2,295                            | 74,535             | — 3.3                                                                        |
| Perry           | 31,087             | 2,443                              | — 4,531                            | 28,999             | —14.6                                                                        |
| Tuscarawas      | 68,816             | 6,701                              | — 5,197                            | 70,320             | — 7.6                                                                        |
| Area 7, K       | 778,685            | 75,919                             | 36,862                             | 891,466            | 4.7                                                                          |
| Adams           | 21,705             | 2,055                              | — 3,261                            | 20,499             | —15.0                                                                        |
| Brown           | 21,638             | 1,432                              | — 849                              | 22,221             | — 3.9                                                                        |
| Clermont        | 34,109             | 3,126                              | 4,947                              | 42,182             | 14.5                                                                         |
| Hamilton—K      | 621,987            | 61,189                             | 40,776                             | 723,952            | 6.6                                                                          |
| Highland        | 27,099             | 1,855                              | — 766                              | 28,188             | — 2.8                                                                        |
| Ross            | 52,147             | 6,262                              | — 3,985                            | 54,424             | — 7.6                                                                        |
| Area 8a, L      | 234,394            | 29,768                             | — 34,574                           | 229,588            | —14.8                                                                        |
| Gallia          | 24,930             | 1,279                              | — 1,299                            | 24,910             | — 5.2                                                                        |
| Hocking         | 21,504             | 1,801                              | — 3,785                            | 19,520             | —17.6                                                                        |
| Jackson         | 27,004             | 3,034                              | — 2,271                            | 27,767             | — 8.4                                                                        |
| Lawrence—L      | 46,705             | 6,627                              | — 4,217                            | 49,115             | — 9.0                                                                        |
| Pike            | 16,113             | 1,947                              | — 3,453                            | 14,607             | —21.4                                                                        |
| Scioto          | 86,565             | 13,823                             | — 17,478                           | 82,910             | —20.2                                                                        |
| Vinton          | 11,573             | 1,257                              | — 2,071                            | 10,759             | —17.9                                                                        |
| Area 8b         | 161,262            | 10,566                             | — 18,407                           | 153,421            | —11.4                                                                        |
| Athens          | 46,166             | 2,724                              | — 3,051                            | 45,839             | — 6.6                                                                        |
| Meigs           | 24,104             | 2,124                              | — 3,001                            | 23,227             | —12.5                                                                        |
| Monroe          | 18,641             | 1,083                              | — 4,362                            | 15,362             | —23.4                                                                        |
| Morgan          | 14,227             | 572                                | — 1,963                            | 12,836             | —13.8                                                                        |
| Noble           | 14,587             | 500                                | — 3,337                            | 11,750             | —22.9                                                                        |
| Washington      | 43,537             | 3,563                              | — 2,693                            | 44,407             | — 6.2                                                                        |

Note: Totals for the economic areas in these tables include both metropolitan and non-metropolitan counties.

**Appendix Table B.—Urban Population, Natural Increase and  
Net Migration, Ohio Counties, 1940-50**

|                 | 1940<br>population | Excess of<br>births over<br>deaths | Net change<br>through<br>migration | 1950<br>population* | Net change<br>through<br>migration as<br>percentage<br>of 1940<br>population |
|-----------------|--------------------|------------------------------------|------------------------------------|---------------------|------------------------------------------------------------------------------|
| Ohio            | 4,612,986          | 546,967                            | 17,524                             | 5,177,477           | 0.4                                                                          |
| Area 1, A       | 366,406            | 37,917                             | 2,837                              | 407,160             | 0.8                                                                          |
| Defiance        | 12,293             | 1,359                              | 242                                | 13,894              | 2.0                                                                          |
| Fulton          | 3,016              | 218                                | 260                                | 3,494               | 8.6                                                                          |
| Henry           | 4,825              | 405                                | 105                                | 5,335               | 2.2                                                                          |
| Lucas—A         | 287,032            | 28,695                             | — 6,563                            | 309,164             | — 2.3                                                                        |
| Ottawa          | 4,505              | 768                                | 268                                | 5,541               | 5.9                                                                          |
| Paulding        | 0                  | 0                                  | 0                                  | 0                   | 0                                                                            |
| Putnam          | 0                  | 0                                  | 0                                  | 0                   | 0                                                                            |
| Sandusky        | 20,478             | 2,566                              | 545                                | 23,589              | 2.7                                                                          |
| Van Wert        | 11,887             | 1,033                              | 246                                | 13,166              | 2.1                                                                          |
| Williams        | 9,107              | 862                                | 263                                | 10,232              | 2.9                                                                          |
| Wood            | 13,263             | 2,011                              | 7,471                              | 22,745              | 56.3                                                                         |
| Area 2          | 195,073            | 22,205                             | 572                                | 217,850             | 0.3                                                                          |
| Allen           | 47,797             | 7,457                              | — 1,590                            | 53,664              | — 3.3                                                                        |
| Auglaize        | 10,757             | 1,002                              | 246                                | 12,005              | 2.3                                                                          |
| Crawford        | 22,749             | 2,196                              | — 52                               | 24,893              | — 0.2                                                                        |
| Hancock         | 22,361             | 2,425                              | 1,346                              | 26,132              | 6.0                                                                          |
| Hardin          | 7,593              | 434                                | 448                                | 8,475               | 5.9                                                                          |
| Logan           | 9,808              | 546                                | — 122                              | 10,232              | — 1.2                                                                        |
| Marion          | 30,817             | 3,849                              | — 849                              | 33,817              | — 2.8                                                                        |
| Mercer          | 4,841              | 404                                | 458                                | 5,703               | 9.5                                                                          |
| Seneca          | 27,422             | 2,916                              | 678                                | 31,016              | 2.5                                                                          |
| Union           | 4,037              | 371                                | — 152                              | 4,256               | — 3.8                                                                        |
| Wyandot         | 6,891              | 605                                | 161                                | 7,657               | 2.3                                                                          |
| Area 3, B, C, D | 826,038            | 114,278                            | 42,543                             | 982,859             | 5.1                                                                          |
| Butler—D        | 84,568             | 12,866                             | 1,156                              | 98,590              | 1.4                                                                          |
| Champaign       | 8,335              | 879                                | 121                                | 9,335               | 1.5                                                                          |
| Clark           | 70,662             | 8,823                              | — 977                              | 78,508              | — 1.4                                                                        |
| Clinton         | 5,971              | 380                                | 1,036                              | 7,387               | 17.4                                                                         |
| Darke           | 7,745              | 464                                | 650                                | 8,859               | 8.4                                                                          |
| Delaware        | 8,944              | 653                                | 2,207                              | 11,804              | 24.8                                                                         |
| Fayette         | 9,402              | 651                                | 507                                | 10,560              | 5.4                                                                          |
| Franklin—B      | 33,268             | 36,831                             | 46,852                             | 413,951             | 14.2                                                                         |
| Greene—C        | 13,182             | 1,275                              | — 1,580                            | 12,877              | —12.0                                                                        |
| Madison         | 4,697              | 808                                | — 283                              | 5,222               | — 6.0                                                                        |
| Miami           | 28,625             | 3,128                              | — 341                              | 31,412              | — 1.2                                                                        |
| Montgomery—C    | 223,914            | 43,595                             | — 7,617                            | 259,892             | — 3.4                                                                        |
| Pickaway        | 7,982              | 771                                | — 30                               | 8,723               | — 0.4                                                                        |
| Preble          | 3,552              | 163                                | 527                                | 4,242               | 14.8                                                                         |
| Shelby          | 9,790              | 1,599                              | 102                                | 11,491              | 1.0                                                                          |
| Warren          | 8,401              | 1,392                              | 213                                | 10,006              | 2.5                                                                          |
| Area 4a, E      | 1,327,626          | 151,889                            | 33,188                             | 1,512,703           | 2.5                                                                          |
| Cuyahoga—E      | 1,183,490          | 132,073                            | 10,048                             | 1,325,611           | 0.8                                                                          |
| Erie            | 24,874             | 2,713                              | 1,788                              | 29,375              | 7.2                                                                          |
| Huron           | 16,005             | 1,282                              | 1,169                              | 18,456              | 7.3                                                                          |
| Lake—E          | 24,282             | 5,230                              | 7,529                              | 37,041              | 31.0                                                                         |
| Lorain          | 78,975             | 10,591                             | 12,654                             | 102,220             | 16.0                                                                         |
| Area 4b         | 85,901             | 11,504                             | — 47                               | 97,358              | — 0.1                                                                        |
| Ashland         | 12,453             | 1,235                              | 3,122                              | 16,810              | 25.1                                                                         |
| Holmes          | 0                  | 0                                  | 0                                  | 0                   | 0                                                                            |
| Medina          | 10,854             | 1,610                              | 599                                | 13,063              | 5.5                                                                          |

**Appendix Table B.—Urban Population, Natural Increase and  
Net Migration, Ohio Counties, 1940-50—Continued**

|                 | 1940<br>population | Excess of<br>births over<br>deaths | Net change<br>through<br>migration | 1950<br>population* | Net change<br>through<br>migration as<br>percentage<br>of 1940<br>population |
|-----------------|--------------------|------------------------------------|------------------------------------|---------------------|------------------------------------------------------------------------------|
| Richland        | 43,797             | 6,148                              | — 5,428                            | 44,517              | —12.4                                                                        |
| Wayne           | 18,797             | 2,511                              | — 1,660                            | 22,968              | 8.8                                                                          |
| Area 5, F, G, H | 838,334            | 118,778                            | — 39,751                           | 917,361             | — 4.7                                                                        |
| Ashtabula       | 34,931             | 4,037                              | — 324                              | 38,644              | — 0.9                                                                        |
| Columbiana      | 54,717             | 5,561                              | — 1,031                            | 59,247              | — 1.9                                                                        |
| Geauga          | 0                  | 0                                  | 0                                  | 0                   | 0                                                                            |
| Mahoning—H      | 197,050            | 22,874                             | — 22,819                           | 197,105             | —11.6                                                                        |
| Portage         | 17,119             | 1,674                              | — 3,482                            | 22,275              | 20.3                                                                         |
| Stark—G         | 165,380            | 25,503                             | — 8,689                            | 182,194             | — 5.3                                                                        |
| Summit—F        | 292,817            | 47,111                             | — 2,487                            | 337,441             | — 0.8                                                                        |
| Trumbull—H      | 76,320             | 12,018                             | — 7,883                            | 80,455              | —10.3                                                                        |
| Area 6a         | 63,549             | 7,093                              | — 2                                | 70,640              | 0.0                                                                          |
| Fairfield       | 21,940             | 2,833                              | — 593                              | 24,180              | — 2.7                                                                        |
| Knox            | 10,122             | 1,201                              | — 862                              | 12,185              | 8.5                                                                          |
| Licking         | 31,487             | 3,059                              | — 271                              | 34,275              | — 0.9                                                                        |
| Morrow          | 0                  | 0                                  | 0                                  | 0                   | 0                                                                            |
| Area 6b, J      | 210,650            | 19,657                             | — 20,730                           | 209,577             | — 9.8                                                                        |
| Belmont—J       | 45,228             | 3,717                              | — 6,705                            | 42,240              | —14.8                                                                        |
| Carroll         | 3,922              | 319                                | — 3                                | 4,244               | 0.1                                                                          |
| Coshocton       | 11,509             | 550                                | — 384                              | 11,675              | — 3.3                                                                        |
| Guernsey        | 15,044             | 804                                | — 1,109                            | 14,739              | — 7.4                                                                        |
| Harrison        | 2,808              | 217                                | — 5                                | 3,020               | — 0.2                                                                        |
| Jefferson—J     | 50,269             | 5,755                              | — 8,435                            | 47,589              | —16.8                                                                        |
| Muskingum       | 37,500             | 4,137                              | — 1,120                            | 40,517              | — 3.0                                                                        |
| Perry           | 6,939              | 803                                | — 549                              | 7,193               | — 7.9                                                                        |
| Tuscarawas      | 37,431             | 3,355                              | — 2,426                            | 38,360              | — 6.5                                                                        |
| Area 7, K       | 573,836            | 52,929                             | — 11,954                           | 638,719             | 2.1                                                                          |
| Adams           | 0                  | 0                                  | 0                                  | 0                   | 0                                                                            |
| Brown           | 0                  | 0                                  | 0                                  | 0                   | 0                                                                            |
| Clermont        | 0                  | 0                                  | 0                                  | 0                   | 0                                                                            |
| Hamilton—K      | 544,766            | 49,864                             | — 13,968                           | 608,598             | 2.6                                                                          |
| Highland        | 8,941              | 514                                | — 533                              | 9,988               | 6.0                                                                          |
| Ross            | 20,129             | 2,551                              | — 2,547                            | 20,133              | —12.7                                                                        |
| Area 82, L      | 88,182             | 7,669                              | — 14,541                           | 81,310              | —16.5                                                                        |
| Gallia          | 7,832              | — 235                              | — 274                              | 7,871               | 3.5                                                                          |
| Hocking         | 6,177              | 467                                | — 672                              | 5,972               | —10.9                                                                        |
| Jackson         | 11,832             | 961                                | — 598                              | 12,195              | — 5.0                                                                        |
| Lawrence—L      | 15,851             | 1,676                              | — 1,194                            | 16,333              | — 7.5                                                                        |
| Pike            | 0                  | 0                                  | 0                                  | 0                   | 0                                                                            |
| Scioto          | 46,490             | 4,800                              | — 12,351                           | 38,939              | —26.6                                                                        |
| Vinton          | 0                  | 0                                  | 0                                  | 0                   | 0                                                                            |
| Area 8b         | 37,391             | 3,048                              | — 1,501                            | 41,940              | 4.0                                                                          |
| Athens          | 15,911             | 1,372                              | — 1,549                            | 18,832              | 9.7                                                                          |
| Meigs           | 6,937              | 644                                | — 479                              | 7,102               | — 6.9                                                                        |
| Monroe          | 0                  | 0                                  | 0                                  | 0                   | 0                                                                            |
| Morgan          | 0                  | 0                                  | 0                                  | 0                   | 0                                                                            |
| Noble           | 0                  | 0                                  | 0                                  | 0                   | 0                                                                            |
| Washington      | 14,543             | 1,032                              | — 431                              | 16,006              | 3.0                                                                          |

\*All places that had 2,500 people or less in 1940 were kept constant according to their 1940 definition and were considered rural for this study.



**Appendix Table C.—Rural Population, Natural Increase and  
Net Migration, Ohio Counties, 1940-1950**

|                 | 1940<br>population | Excess of<br>births over<br>deaths | Net change<br>through<br>migration | 1950<br>population* | Net change<br>through<br>migration as<br>percentage of<br>1940<br>population |
|-----------------|--------------------|------------------------------------|------------------------------------|---------------------|------------------------------------------------------------------------------|
| Ohio            | 2,294,626          | 248,578                            | 225,946                            | 2,769,150           | 9.8                                                                          |
| Area 1, A       | 258,658            | 27,808                             | 4,509                              | 290,975             | 1.7                                                                          |
| Defiance        | 12,074             | 1,357                              | — 1,400                            | 12,031              | —11.6                                                                        |
| Fulton          | 20,610             | 2,750                              | — 1,274                            | 22,086              | — 6.2                                                                        |
| Henry           | 17,931             | 1,840                              | — 2,683                            | 17,088              | —12.3                                                                        |
| Lucas—A         | 57,301             | 6,946                              | 22,140                             | 86,387              | 38.6                                                                         |
| Ottawa          | 19,855             | 2,071                              | 2,002                              | 23,928              | 10.1                                                                         |
| Paulding        | 15,527             | 1,445                              | — 1,925                            | 15,047              | —12.4                                                                        |
| Putnam          | 25,016             | 3,149                              | — 2,917                            | 25,248              | —11.7                                                                        |
| Sandusky        | 20,536             | 2,091                              | — 102                              | 22,525              | — 0.5                                                                        |
| Van Wert        | 14,872             | 1,484                              | — 2,551                            | 13,805              | —16.1                                                                        |
| Williams        | 16,403             | 1,405                              | — 1,838                            | 15,970              | —11.2                                                                        |
| Wood            | 38,533             | 3,270                              | — 4,943                            | 36,860              | —12.8                                                                        |
| Area 2          | 198,199            | 20,532                             | — 3,021                            | 215,710             | — 1.5                                                                        |
| Allen           | 25,506             | 2,973                              | 6,040                              | 34,519              | 23.7                                                                         |
| Auglaize        | 17,280             | 1,719                              | — 367                              | 18,632              | — 2.1                                                                        |
| Crawford        | 12,822             | 1,472                              | — 449                              | 13,845              | — 3.5                                                                        |
| Hancock         | 18,432             | 1,544                              | — 1,828                            | 18,148              | — 9.9                                                                        |
| Hardin          | 19,468             | 2,123                              | — 1,393                            | 20,198              | — 7.2                                                                        |
| Logan           | 19,816             | 1,879                              | — 598                              | 21,097              | — 3.0                                                                        |
| Marion          | 14,081             | 1,478                              | — 583                              | 16,142              | 4.1                                                                          |
| Mercer          | 21,415             | 2,864                              | — 1,671                            | 22,608              | — 7.8                                                                        |
| Seneca          | 21,077             | 2,292                              | — 1,407                            | 21,962              | — 6.7                                                                        |
| Union           | 15,975             | 1,143                              | — 687                              | 16,431              | — 4.3                                                                        |
| Wyandot         | 12,327             | 1,045                              | — 1,244                            | 12,128              | —10.1                                                                        |
| Area 3, B, C, D | 426,367            | 49,115                             | 115,297                            | 590,779             | 27.0                                                                         |
| Butler—D        | 35,681             | 4,922                              | 8,010                              | 48,613              | 22.4                                                                         |
| Champaign       | 16,923             | 1,828                              | — 1,293                            | 17,458              | — 7.6                                                                        |
| Clark           | 24,985             | 2,797                              | 5,371                              | 33,153              | 21.5                                                                         |
| Clinton         | 16,603             | 1,432                              | — 150                              | 18,185              | 0.9                                                                          |
| Darke           | 31,086             | 3,252                              | — 1,398                            | 32,940              | — 4.5                                                                        |
| Delaware        | 17,836             | 1,355                              | — 717                              | 18,474              | — 4.0                                                                        |
| Fayette         | 11,983             | 1,337                              | — 1,326                            | 11,994              | —11.1                                                                        |
| Franklin—B      | 58,444             | 10,015                             | 21,000                             | 89,459              | 35.9                                                                         |
| Greene—C        | 22,681             | 4,964                              | 18,370                             | 46,015              | 81.0                                                                         |
| Madison         | 17,114             | 1,364                              | — 1,400                            | 17,078              | — 8.2                                                                        |
| Miami           | 24,007             | 3,461                              | 2,429                              | 29,897              | 10.1                                                                         |
| Montgomery—C    | 71,566             | 5,191                              | 61,792                             | 138,549             | 86.3                                                                         |
| Pickaway        | 19,907             | 974                                | — 252                              | 20,629              | — 1.3                                                                        |
| Preble          | 19,777             | 1,664                              | — 1,398                            | 22,839              | 7.1                                                                          |
| Shelby          | 16,281             | 1,709                              | — 993                              | 16,997              | — 6.1                                                                        |
| Warren          | 21,493             | 2,850                              | 4,156                              | 28,499              | 19.3                                                                         |
| Area 4a, E      | 130,035            | 15,238                             | 47,615                             | 192,888             | 36.6                                                                         |
| Cuyahoga—E      | 33,760             | 4,193                              | 25,968                             | 63,921              | 76.9                                                                         |
| Erie            | 18,327             | 1,292                              | 3,571                              | 23,190              | 19.5                                                                         |
| Huron           | 18,795             | 2,188                              | — 86                               | 20,897              | — 0.5                                                                        |
| Lake—E          | 25,738             | 2,851                              | 10,349                             | 38,938              | 40.2                                                                         |
| Lorain          | 33,415             | 4,714                              | 7,813                              | 45,942              | 23.4                                                                         |
| Area 4b         | 119,167            | 14,157                             | 11,556                             | 144,880             | 9.7                                                                          |
| Ashland         | 17,332             | 1,691                              | — 2,793                            | 16,230              | —16.1                                                                        |
| Holmes          | 17,876             | 2,557                              | — 1,673                            | 18,760              | — 9.9                                                                        |
| Medina          | 22,180             | 2,026                              | 3,148                              | 27,354              | 14.2                                                                         |

**Appendix Table C.—Rural Population, Natural Increase and  
Net Migration, Ohio Counties, 1940-1950—Continued**

|                 | 1940<br>population | Excess of<br>births over<br>deaths | Net change<br>through<br>migration | 1950<br>population* | Net change<br>through<br>migration as<br>percentage<br>of 1940<br>population |
|-----------------|--------------------|------------------------------------|------------------------------------|---------------------|------------------------------------------------------------------------------|
| Richland        | 30,056             | 3,291                              | 13,441                             | 46,788              | 44.7                                                                         |
| Wayne           | 31,723             | 4,592                              | — 567                              | 35,748              | — 1.8                                                                        |
| Area 5, F, G, H | 333,409            | 39,300                             | 87,915                             | 460,624             | 26.4                                                                         |
| Ashtabula       | 33,743             | 1,566                              | 4,742                              | 40,051              | 14.1                                                                         |
| Columbiana      | 35,404             | 4,329                              | — 60                               | 39,673              | — 0.2                                                                        |
| Geauga          | 19,430             | 2,789                              | 4,427                              | 26,646              | 22.8                                                                         |
| Mahoning—H      | 43,201             | 3,462                              | 13,861                             | 60,524              | 32.1                                                                         |
| Portage         | 29,541             | 5,201                              | 6,937                              | 41,679              | 23.5                                                                         |
| Stark—G         | 69,507             | 7,754                              | 23,739                             | 101,000             | 34.2                                                                         |
| Summit—F        | 46,588             | 7,074                              | 18,929                             | 72,591              | 40.6                                                                         |
| Trumbull—H      | 55,995             | 7,125                              | 15,340                             | 78,460              | 27.4                                                                         |
| Area 6a         | 93,890             | 7,001                              | 3,699                              | 104,590             | 3.9                                                                          |
| Fairfield       | 26,550             | 2,161                              | — 761                              | 27,950              | — 2.9                                                                        |
| Knox            | 20,902             | 1,650                              | 550                                | 23,102              | 2.6                                                                          |
| Licking         | 30,792             | 2,160                              | 3,418                              | 36,370              | 11.1                                                                         |
| Morrow          | 15,646             | 1,030                              | 492                                | 17,168              | 3.1                                                                          |
| Area 6b, J      | 259,969            | 22,820                             | — 26,591                           | 256,198             | —10.2                                                                        |
| Belmont—J       | 50,386             | 4,244                              | — 9,130                            | 45,500              | —18.1                                                                        |
| Carrroll        | 13,527             | 1,252                              | 16                                 | 14,795              | 0.1                                                                          |
| Coshocton       | 19,085             | 1,606                              | — 1,225                            | 19,466              | — 6.4                                                                        |
| Guernsey        | 23,778             | 609                                | — 674                              | 23,713              | — 2.8                                                                        |
| Harrison        | 17,505             | 1,307                              | — 2,778                            | 16,034              | —15.9                                                                        |
| Jefferson—J     | 47,860             | 5,918                              | — 4,872                            | 48,906              | —10.2                                                                        |
| Muskingum       | 32,295             | 2,898                              | — 1,175                            | 34,018              | — 3.6                                                                        |
| Perry           | 24,148             | 1,640                              | — 3,982                            | 21,806              | —16.5                                                                        |
| Tuscarawas      | 31,385             | 3,346                              | — 2,771                            | 31,960              | — 8.8                                                                        |
| Area 7, K       | 204,849            | 22,990                             | 24,908                             | 252,747             | 12.2                                                                         |
| Adams           | 21,705             | 2,055                              | — 3,261                            | 20,499              | —15.0                                                                        |
| Brown           | 21,638             | 1,432                              | — 849                              | 22,221              | — 3.9                                                                        |
| Clermont        | 34,109             | 3,126                              | 4,947                              | 42,182              | 14.5                                                                         |
| Hamilton—K      | 77,221             | 11,325                             | 26,808                             | 115,354             | 34.7                                                                         |
| Highland        | 18,158             | 1,341                              | — 1,299                            | 18,200              | — 7.2                                                                        |
| Ross            | 32,018             | 3,711                              | — 1,438                            | 34,291              | — 4.5                                                                        |
| Area 8a, L      | 146,212            | 22,099                             | — 20,033                           | 148,278             | —13.7                                                                        |
| Gallia          | 17,098             | 1,514                              | — 1,573                            | 17,039              | — 9.2                                                                        |
| Hocking         | 15,327             | 1,334                              | — 3,113                            | 13,548              | —20.3                                                                        |
| Jackson         | 15,172             | 2,073                              | — 1,673                            | 15,572              | —11.0                                                                        |
| Lawrence—L      | 30,854             | 4,951                              | — 3,023                            | 32,782              | — 9.8                                                                        |
| Pike            | 16,113             | 1,947                              | — 3,453                            | 14,607              | —21.4                                                                        |
| Scioto          | 40,075             | 9,023                              | — 5,127                            | 43,971              | 12.8                                                                         |
| Vinton          | 11,572             | 1,257                              | — 2,071                            | 10,759              | —17.9                                                                        |
| Area 8b         | 123,871            | 7,518                              | — 19,908                           | 111,481             | —16.1                                                                        |
| Athens          | 30,255             | 1,352                              | — 4,600                            | 27,007              | —15.2                                                                        |
| Meigs           | 17,167             | 1,480                              | — 2,522                            | 16,125              | —14.7                                                                        |
| Monroe          | 18,641             | 1,083                              | — 4,362                            | 15,362              | —23.4                                                                        |
| Morgan          | 14,227             | 572                                | — 1,963                            | 12,836              | —13.8                                                                        |
| Noble           | 14,587             | 500                                | — 3,337                            | 11,750              | —22.9                                                                        |
| Washington      | 28,994             | 2,531                              | — 3,124                            | 28,401              | —10.8                                                                        |

\*All places that had 2,500 people or less in 1940 were kept constant according to their 1940 definition and were considered rural for this study.

APPENDIX TABLE D. - SELECTED AGRICULTURAL ITEMS, 1950, AND PERCENTAGE CHANGE IN SELECTED ITEMS, 1940-50,  
OHIO COUNTIES

| AREA AND COUNTY | NUMBER OF FARMS, 1950 | PERCENTAGE CHANGE IN NUMBER OF FARMS 1940-50 | FARM OPERATOR FAMILY LEVEL OF LIVING INDEX, 1950 | PERCENTAGE CHANGE IN LEVEL OF LIVING INDEX 1940-50 | PERCENTAGE CHANGE IN CASH FARM WAGE EXPENDITURES (ADJUSTED FOR CHANGE IN FARM WAGE RATES) 1939-49 | PERCENTAGE CHANGE IN NUMBER OF TRACTORS, 1940-50 | PERCENTAGE CHANGE IN NUMBER OF MILK COWS 1940-50 | PERCENTAGE OF FARMS WITH MILK COWS REPORTING MILKING MACHINES, 1950 | PERCENTAGE CHANGE IN VALUE OF FARM PRODUCTS SOLD (ADJUSTED FOR CHANGES IN PRICES FARMERS RECEIVED) 1939-49 |
|-----------------|-----------------------|----------------------------------------------|--------------------------------------------------|----------------------------------------------------|---------------------------------------------------------------------------------------------------|--------------------------------------------------|--------------------------------------------------|---------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|
| OHIO            | 199,359               | -14.7                                        | 148                                              | 31.0                                               | -27.8                                                                                             | 102.9                                            | - 6.3                                            | 28.0                                                                | 7.8                                                                                                        |
| AREA 1, A       | 23,625                | -11.2                                        | 161                                              | 25.8                                               | -26.9                                                                                             | 71.9                                             | -17.4                                            | 34.7                                                                | 6.3                                                                                                        |
| DEFANCE         | 1,914                 | -10.6                                        | 156                                              | 25.8                                               | -28.1                                                                                             | 77.4                                             | -17.2                                            | 39.0                                                                | 9.9                                                                                                        |
| FULTON          | 2,480                 | -10.5                                        | 172                                              | 26.5                                               | -11.0                                                                                             | 92.5                                             | -17.1                                            | 58.0                                                                | 30.2                                                                                                       |
| HENRY           | 2,254                 | - 8.0                                        | 176                                              | 23.9                                               | -31.8                                                                                             | 56.9                                             | -16.9                                            | 30.4                                                                | 5.6                                                                                                        |
| LUCAS - A       | 2,042                 | -15.0                                        | 155                                              | 20.2                                               | -20.8                                                                                             | 61.1                                             | -37.7                                            | 11.8                                                                | 1.5                                                                                                        |
| OTTOMA          | 1,527                 | - 9.1                                        | 145                                              | 25.0                                               | -35.8                                                                                             | 68.3                                             | -28.9                                            | 26.9                                                                | -8.8                                                                                                       |
| PAULDING        | 1,509                 | -14.2                                        | 149                                              | 18.3                                               | -62.4                                                                                             | 47.6                                             | -30.1                                            | 21.8                                                                | -16.0                                                                                                      |
| PUTNAM          | 2,601                 | - 9.3                                        | 179                                              | 29.7                                               | 5.6                                                                                               | 83.4                                             | - 2.8                                            | 29.5                                                                | 14.0                                                                                                       |
| SANDUSKY        | 2,130                 | -10.6                                        | 162                                              | 32.8                                               | -27.6                                                                                             | 89.1                                             | - 8.0                                            | 39.6                                                                | 14.5                                                                                                       |
| VAN WERT        | 1,932                 | -18.5                                        | 167                                              | 33.6                                               | -21.4                                                                                             | 82.5                                             | -22.6                                            | 34.1                                                                | -8.4                                                                                                       |
| WILLIAMS        | 2,159                 | - 9.4                                        | 150                                              | 24.0                                               | -27.4                                                                                             | 85.4                                             | -11.8                                            | 45.2                                                                | 12.5                                                                                                       |
| WOOD            | 3,077                 | - 9.7                                        | 161                                              | 27.8                                               | -25.0                                                                                             | 56.2                                             | -23.4                                            | 26.4                                                                | 5.5                                                                                                        |
| AREA 2          | 23,979                | - 9.0                                        | 161                                              | 23.8                                               | -31.9                                                                                             | 93.5                                             | - 4.6                                            | 33.2                                                                | 11.6                                                                                                       |
| ALLEN           | 2,560                 | - 0.5                                        | 171                                              | 24.8                                               | -17.0                                                                                             | 101.9                                            | - 3.6                                            | 26.8                                                                | 20.2                                                                                                       |
| ANGELIZ         | 2,216                 | - 7.2                                        | 157                                              | 22.7                                               | -49.7                                                                                             | 67.3                                             | - 1.1                                            | 38.7                                                                | 27.3                                                                                                       |
| CHAMFORD        | 1,926                 | - 6.2                                        | 160                                              | 16.8                                               | -48.2                                                                                             | 99.5                                             | - 7.7                                            | 29.8                                                                | 0.3                                                                                                        |
| HANCOCK         | 2,565                 | - 8.4                                        | 167                                              | 17.6                                               | -26.2                                                                                             | 66.6                                             | -15.0                                            | 31.0                                                                | 6.8                                                                                                        |
| HARDIA          | 2,071                 | -12.2                                        | 153                                              | 20.2                                               | -33.5                                                                                             | 79.0                                             | - 5.1                                            | 23.0                                                                | 11.2                                                                                                       |
| LOGAN           | 2,165                 | -13.2                                        | 160                                              | 28.0                                               | -22.9                                                                                             | 111.8                                            | 4.3                                              | 48.5                                                                | 8.2                                                                                                        |
| MARION          | 1,530                 | -16.8                                        | 158                                              | 17.0                                               | -41.7                                                                                             | 66.0                                             | -13.6                                            | 25.7                                                                | -4.4                                                                                                       |
| MERCER          | 2,556                 | - 8.6                                        | 159                                              | 28.2                                               | - 9.5                                                                                             | 82.2                                             | 17.4                                             | 36.9                                                                | 34.2                                                                                                       |
| SENECA          | 2,524                 | - 9.2                                        | 163                                              | 19.0                                               | -24.0                                                                                             | 74.6                                             | - 9.9                                            | 29.4                                                                | 2.9                                                                                                        |
| UNION           | 2,086                 | -10.5                                        | 159                                              | 22.3                                               | -39.3                                                                                             | 96.4                                             | -14.9                                            | 40.6                                                                | 15.0                                                                                                       |
| WYANDOT         | 1,780                 | - 6.8                                        | 171                                              | 34.6                                               | -31.4                                                                                             | 122.3                                            | - 6.0                                            | 30.4                                                                | 10.2                                                                                                       |
| AREA 3, B,C,D,  | 36,337                | -12.9                                        | 165                                              | 24.1                                               | -28.3                                                                                             | 82.8                                             | - 8.9                                            | 34.1                                                                | 11.2                                                                                                       |
| BUTLER - D      | 2,471                 | -15.6                                        | 169                                              | 22.5                                               | -49.8                                                                                             | 85.2                                             | - 9.2                                            | 34.7                                                                | 26.4                                                                                                       |
| CHAMPAIGN       | 2,013                 | - 2.0                                        | 167                                              | 16.0                                               | -32.7                                                                                             | 112.1                                            | 2.4                                              | 51.8                                                                | 9.3                                                                                                        |
| CLARK           | 1,853                 | -18.8                                        | 179                                              | 23.4                                               | -33.3                                                                                             | 85.5                                             | -18.9                                            | 67.7                                                                | 0.2                                                                                                        |
| CLINTON         | 1,827                 | - 9.6                                        | 161                                              | 28.6                                               | -13.6                                                                                             | 81.9                                             | - 2.7                                            | 19.8                                                                | 30.6                                                                                                       |
| DARKE           | 4,307                 | - 8.0                                        | 156                                              | 33.3                                               | 0.4                                                                                               | 86.2                                             | - 2.8                                            | 33.2                                                                | 17.7                                                                                                       |
| DELAWARE        | 2,347                 | -15.6                                        | 160                                              | 23.0                                               | -36.7                                                                                             | 104.7                                            | -13.1                                            | 44.8                                                                | -4.3                                                                                                       |
| FAYETTE         | 1,362                 | -12.9                                        | 189                                              | 38.0                                               | -32.0                                                                                             | 90.8                                             | - 5.2                                            | 16.7                                                                | 21.3                                                                                                       |
| FRANKLIN - B    | 2,641                 | -24.8                                        | 166                                              | 20.3                                               | -18.0                                                                                             | 67.9                                             | -24.1                                            | 31.3                                                                | 3.9                                                                                                        |
| GREENE - C      | 1,914                 | -11.6                                        | 160                                              | 22.1                                               | -34.4                                                                                             | 74.6                                             | -14.1                                            | 29.1                                                                | 8.7                                                                                                        |
| MADISON         | 1,344                 | -13.4                                        | 176                                              | 36.4                                               | -40.1                                                                                             | 86.5                                             | - 4.6                                            | 21.3                                                                | 20.7                                                                                                       |
| MIAMI           | 2,527                 | -11.9                                        | 162                                              | 20.9                                               | -24.8                                                                                             | 72.3                                             | -20.7                                            | 38.6                                                                | 3.3                                                                                                        |

| AREA AND COUNTY | NUMBER OF FARMS, 1950 | PERCENTAGE CHANGE IN NUMBER OF FARMS 1940-50 | FARM OPERATOR FAMILY LEVEL OF LIVING INDEX, 1950 | PERCENTAGE CHANGE IN LEVEL OF LIVING INDEX 1940-50 | PERCENTAGE CHANGE IN CASH FARM WAGE EXPENDITURES (ADJUSTED FOR CHANGE IN FARM WAGE RATES) 1939-49 | PERCENTAGE CHANGE IN NUMBER OF TRACTORS, 1940-50 | PERCENTAGE CHANGE IN NUMBER OF MILK COWS 1940-50 | PERCENTAGE OF FARMS WITH MILK COWS REPORTING MILKING, MACHINES, 1950 | PERCENTAGE CHANGE IN VALUE OF FARM PRODUCTS SOLD (ADJUSTED FOR CHANGES IN PRICES FARMERS RECEIVED) 1939-49 |
|-----------------|-----------------------|----------------------------------------------|--------------------------------------------------|----------------------------------------------------|---------------------------------------------------------------------------------------------------|--------------------------------------------------|--------------------------------------------------|----------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|
| MONTGOMERY - C  | 3,259                 | -21.7                                        | 168                                              | 23.5                                               | -39.5                                                                                             | 58.5                                             | -27.1                                            | 27.7                                                                 | - 8.9                                                                                                      |
| PICKAWAY        | 1,750                 | - 6.4                                        | 172                                              | 28.4                                               | -12.0                                                                                             | 95.0                                             | - 1.1                                            | 23.0                                                                 | 21.9                                                                                                       |
| PREBLE          | 2,361                 | - 8.8                                        | 162                                              | 20.9                                               | -25.5                                                                                             | 78.5                                             | - 1.4                                            | 28.3                                                                 | 2.2                                                                                                        |
| SHELBY          | 2,167                 | - 3.8                                        | 152                                              | 12.6                                               | -27.7                                                                                             | 65.8                                             | 1.3                                              | 44.7                                                                 | 19.8                                                                                                       |
| WARREN          | 2,194                 | -10.8                                        | 149                                              | 28.1                                               | -12.9                                                                                             | 114.1                                            | -13.2                                            | 27.1                                                                 | 17.9                                                                                                       |
| AREA 4A, E      | 9,259                 | -19.8                                        | 163                                              | 20.7                                               | -36.3                                                                                             | 78.9                                             | -18.1                                            | 32.5                                                                 | - 4.2                                                                                                      |
| CUYAHOGA - E    | 1,589                 | -36.4                                        | 175                                              | 26.8                                               | -29.9                                                                                             | 44.7                                             | -45.5                                            | 13.6                                                                 | - 6.7                                                                                                      |
| ERIE            | 1,272                 | -18.5                                        | 155                                              | 18.3                                               | -17.2                                                                                             | 83.8                                             | -20.2                                            | 28.7                                                                 | - 4.1                                                                                                      |
| HURON           | 2,345                 | - 4.6                                        | 163                                              | 24.4                                               | -16.6                                                                                             | 101.6                                            | - 6.8                                            | 30.6                                                                 | 19.8                                                                                                       |
| LAKE - E        | 1,178                 | -26.4                                        | 163                                              | 19.0                                               | -60.6                                                                                             | 70.7                                             | -32.6                                            | 14.1                                                                 | -40.1                                                                                                      |
| LORAIN          | 2,875                 | -16.0                                        | 161                                              | 17.5                                               | -22.5                                                                                             | 80.7                                             | -16.5                                            | 46.0                                                                 | - 7.4                                                                                                      |
| AREA 4B         | 12,673                | -11.9                                        | 143                                              | 23.3                                               | -18.2                                                                                             | 141.7                                            | - 3.9                                            | 34.8                                                                 | 7.7                                                                                                        |
| ASHLAND         | 2,097                 | -10.2                                        | 160                                              | 31.1                                               | -25.5                                                                                             | 168.4                                            | 0.6                                              | 31.1                                                                 | 10.8                                                                                                       |
| HOLMES          | 2,122                 | - 7.2                                        | 97                                               | 15.5                                               | -29.0                                                                                             | 217.5                                            | 14.8                                             | 21.5                                                                 | 13.2                                                                                                       |
| MEDINA          | 2,628                 | -15.9                                        | 157                                              | 18.9                                               | -27.2                                                                                             | 99.7                                             | - 2.0                                            | 45.1                                                                 | 10.1                                                                                                       |
| RICHLAND        | 2,538                 | -11.2                                        | 153                                              | 27.5                                               | -12.4                                                                                             | 184.3                                            | -11.8                                            | 29.9                                                                 | - 2.4                                                                                                      |
| WAYNE           | 3,288                 | -12.9                                        | 146                                              | 18.7                                               | - 8.3                                                                                             | 128.4                                            | 11.6                                             | 43.0                                                                 | 4.8                                                                                                        |
| AREA 5 F, G, H  | 23,883                | -16.6                                        | 149                                              | 27.4                                               | -31.0                                                                                             | 105.7                                            | -16.5                                            | 33.6                                                                 | - 9.8                                                                                                      |
| ASHTABULA       | 3,843                 | -19.0                                        | 145                                              | 28.3                                               | -37.8                                                                                             | 65.4                                             | -16.2                                            | 40.7                                                                 | -20.6                                                                                                      |
| COLUMBIANA      | 3,028                 | -16.9                                        | 151                                              | 36.0                                               | - 6.2                                                                                             | 197.2                                            | -10.7                                            | 33.1                                                                 | 0.7                                                                                                        |
| SEAWAY          | 1,911                 | -23.5                                        | 139                                              | 25.2                                               | -42.1                                                                                             | 84.4                                             | -14.8                                            | 33.5                                                                 | -23.2                                                                                                      |
| MAHONING - H    | 2,306                 | -12.4                                        | 155                                              | 26.0                                               | -38.4                                                                                             | 98.3                                             | -13.6                                            | 28.9                                                                 | 5.9                                                                                                        |
| PORTAGE         | 2,930                 | -13.0                                        | 153                                              | 28.2                                               | -52.4                                                                                             | 103.4                                            | -18.8                                            | 36.0                                                                 | -11.3                                                                                                      |
| STARK - G       | 3,887                 | -17.4                                        | 157                                              | 30.8                                               | -10.1                                                                                             | 131.7                                            | - 9.6                                            | 38.2                                                                 | 2.9                                                                                                        |
| SUMMIT - F      | 2,469                 | -17.3                                        | 153                                              | 22.4                                               | -31.3                                                                                             | 88.4                                             | -37.4                                            | 18.4                                                                 | -27.5                                                                                                      |
| TRUMBULL - H    | 3,508                 | -13.4                                        | 142                                              | 19.3                                               | -38.9                                                                                             | 108.9                                            | -20.7                                            | 28.4                                                                 | -11.2                                                                                                      |
| AREA 6A         | 10,929                | -10.7                                        | 153                                              | 35.4                                               | -19.4                                                                                             | 170.1                                            | 3.8                                              | 30.4                                                                 | 16.4                                                                                                       |
| FAIRFIELD       | 2,782                 | - 8.2                                        | 164                                              | 27.1                                               | - 7.7                                                                                             | 155.1                                            | 10.0                                             | 26.5                                                                 | 18.3                                                                                                       |
| KNOX            | 2,449                 | -15.3                                        | 152                                              | 44.8                                               | -20.1                                                                                             | 186.7                                            | 10.1                                             | 34.1                                                                 | 4.1                                                                                                        |
| LICKING         | 3,457                 | -13.4                                        | 155                                              | 37.2                                               | -22.6                                                                                             | 177.2                                            | - 3.8                                            | 32.3                                                                 | 12.1                                                                                                       |
| MORROW          | 2,241                 | - 3.2                                        | 142                                              | 35.2                                               | -37.3                                                                                             | 166.8                                            | 3.9                                              | 27.9                                                                 | 23.8                                                                                                       |
| AREA 6B, J      | 18,224                | -20.2                                        | 129                                              | 43.3                                               | -18.0                                                                                             | 220.1                                            | - 1.6                                            | 21.2                                                                 | 5.9                                                                                                        |
| BELMONT - J     | 2,707                 | -21.9                                        | 125                                              | 54.3                                               | - 7.4                                                                                             | 270.0                                            | - 1.2                                            | 27.3                                                                 | - 4.9                                                                                                      |
| CARROLL         | 1,680                 | -13.0                                        | 136                                              | 32.0                                               | 8.3                                                                                               | 249.8                                            | 13.5                                             | 25.6                                                                 | 14.2                                                                                                       |
| CORWYTON        | 2,074                 | -16.9                                        | 134                                              | 41.1                                               | -18.0                                                                                             | 214.1                                            | 4.1                                              | 22.1                                                                 | 6.2                                                                                                        |
| GUERNSEY        | 2,247                 | -18.8                                        | 125                                              | 52.4                                               | 23.0                                                                                              | 299.6                                            | - 2.1                                            | 14.4                                                                 | - 1.2                                                                                                      |
| HARRISON        | 1,301                 | -28.4                                        | 121                                              | 45.8                                               | -29.3                                                                                             | 210.7                                            | - 7.2                                            | 23.4                                                                 | -15.3                                                                                                      |
| JEFFERSON - J   | 1,465                 | -27.2                                        | 117                                              | 36.0                                               | -29.7                                                                                             | 142.5                                            | - 9.0                                            | 18.2                                                                 | - 4.5                                                                                                      |

| AREA AND<br>COUNTY | NUMBER<br>OF FARMS,<br>1950 | PERCENTAGE<br>CHANGE IN<br>NUMBER OF<br>FARMS<br>1940-50 | FARM OPERATOR<br>FAMILY LEVEL<br>OF LIVING<br>INDEX, 1950 | PERCENTAGE<br>CHANGE IN<br>LEVEL OF<br>LIVING INDEX<br>1940-50 | PERCENTAGE<br>CHANGE IN CASH<br>FARM WAGE<br>EXPENDITURES<br>(ADJUSTED FOR<br>CHANGE IN FARM<br>WAGE RATES)<br>1939-49 | PERCENTAGE<br>CHANGE IN<br>NUMBER OF<br>TRACTORS,<br>1940-50 | PERCENTAGE<br>CHANGE IN<br>NUMBER OF<br>MILK COWS<br>1940-50 | PERCENTAGE<br>OF FARMS WITH<br>MILK COWS<br>REPORTING<br>MILKING,<br>MACHINES,<br>1950 | PERCENTAGE<br>CHANGE IN<br>VALUE OF FARM<br>PRODUCTS SOLD<br>(ADJUSTED FOR<br>CHANGES IN<br>PRICES FARMERS<br>RECEIVED)<br>1939-49 |
|--------------------|-----------------------------|----------------------------------------------------------|-----------------------------------------------------------|----------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------|--------------------------------------------------------------|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|
| MUSKINGUM          | 2,860                       | -21.3                                                    | 144                                                       | 39.8                                                           | -28.6                                                                                                                  | 265.0                                                        | - 3.3                                                        | 14.4                                                                                   | 21.0                                                                                                                               |
| PERRY              | 1,570                       | -26.3                                                    | 136                                                       | 60.0                                                           | -29.2                                                                                                                  | 186.5                                                        | - 5.9                                                        | 13.8                                                                                   | 1.5                                                                                                                                |
| TUSCARAWAS         | 2,520                       | -11.0                                                    | 125                                                       | 34.4                                                           | -28.4                                                                                                                  | 186.1                                                        | - 4.5                                                        | 29.2                                                                                   | 12.5                                                                                                                               |
| AREA 7, K          | 15,698                      | -13.2                                                    | 142                                                       | 36.5                                                           | -31.4                                                                                                                  | 134.0                                                        | 1.4                                                          | 14.6                                                                                   | 16.7                                                                                                                               |
| ADAMS              | 2,601                       | - 3.1                                                    | 102                                                       | 64.5                                                           | 59.7                                                                                                                   | 268.6                                                        | 26.4                                                         | 8.4                                                                                    | 28.6                                                                                                                               |
| BROWN              | 2,913                       | -12.4                                                    | 125                                                       | 45.3                                                           | -17.8                                                                                                                  | 159.7                                                        | 19.9                                                         | 9.6                                                                                    | 20.0                                                                                                                               |
| CLERMONT           | 3,013                       | -13.0                                                    | 145                                                       | 39.4                                                           | -27.4                                                                                                                  | 157.5                                                        | -17.3                                                        | 16.7                                                                                   | 1.7                                                                                                                                |
| HAMILTON - K       | 2,133                       | -25.6                                                    | 159                                                       | 18.7                                                           | -49.5                                                                                                                  | 80.3                                                         | -35.4                                                        | 18.5                                                                                   | -4.5                                                                                                                               |
| HIGHLAND           | 2,652                       | -11.2                                                    | 176                                                       | 23.9                                                           | -10.4                                                                                                                  | 115.9                                                        | 12.7                                                         | 24.2                                                                                   | 23.7                                                                                                                               |
| ROSS               | 2,386                       | -13.7                                                    | 145                                                       | 51.0                                                           | -32.8                                                                                                                  | 111.6                                                        | 3.1                                                          | 11.3                                                                                   | 22.9                                                                                                                               |
| AREA 8A, L         | 12,213                      | -18.9                                                    | 111                                                       | 68.2                                                           | - 3.7                                                                                                                  | 258.1                                                        | 10.1                                                         | 8.5                                                                                    | 11.7                                                                                                                               |
| GALLIA             | 2,447                       | -10.6                                                    | 120                                                       | 66.7                                                           | - 0.7                                                                                                                  | 374.7                                                        | 30.3                                                         | 8.4                                                                                    | 23.2                                                                                                                               |
| HOCKING            | 1,237                       | -11.8                                                    | 129                                                       | 76.7                                                           | -17.1                                                                                                                  | 268.2                                                        | 2.9                                                          | 14.0                                                                                   | 12.0                                                                                                                               |
| JACKSON            | 1,506                       | -14.3                                                    | 105                                                       | 56.7                                                           | 21.1                                                                                                                   | 314.1                                                        | 12.2                                                         | 7.3                                                                                    | 18.6                                                                                                                               |
| LAWRENCE - L       | 2,155                       | -23.0                                                    | 100                                                       | 78.6                                                           | -29.9                                                                                                                  | 407.3                                                        | 6.7                                                          | 6.1                                                                                    | -1.7                                                                                                                               |
| PIKE               | 1,437                       | -15.6                                                    | 111                                                       | 88.1                                                           | - 5.8                                                                                                                  | 179.8                                                        | 16.5                                                         | 6.6                                                                                    | -1.7                                                                                                                               |
| SCIOTO             | 2,373                       | -29.2                                                    | 114                                                       | 50.0                                                           | 19.7                                                                                                                   | 203.4                                                        | 4.3                                                          | 12.2                                                                                   | 15.1                                                                                                                               |
| VINTON             | 1,058                       | -19.0                                                    | 95                                                        | 61.0                                                           | -19.2                                                                                                                  | 240.0                                                        | -2.6                                                         | 4.0                                                                                    | 3.0                                                                                                                                |
| AREA 8B            | 12,539                      | -23.2                                                    | 124                                                       | 55.0                                                           | -12.7                                                                                                                  | 258.8                                                        | -6.1                                                         | 13.7                                                                                   | 6.5                                                                                                                                |
| ATHENS             | 2,025                       | -16.1                                                    | 123                                                       | 38.2                                                           | -16.8                                                                                                                  | 185.8                                                        | -1.1                                                         | 16.1                                                                                   | -11.6                                                                                                                              |
| MEIGS              | 1,891                       | -30.0                                                    | 133                                                       | 66.2                                                           | - 9.7                                                                                                                  | 334.9                                                        | -11.3                                                        | 14.7                                                                                   | 8.3                                                                                                                                |
| MONROE             | 2,238                       | -25.0                                                    | 122                                                       | 84.8                                                           | 29.1                                                                                                                   | 397.3                                                        | - 8.5                                                        | 15.8                                                                                   | 17.4                                                                                                                               |
| MORGAN             | 1,766                       | -19.2                                                    | 128                                                       | 50.6                                                           | - 5.6                                                                                                                  | 265.2                                                        | -16.2                                                        | 13.2                                                                                   | 5.0                                                                                                                                |
| NOBLE              | 1,695                       | -22.7                                                    | 123                                                       | 36.7                                                           | -36.3                                                                                                                  | 318.3                                                        | - 2.4                                                        | 9.5                                                                                    | 0.3                                                                                                                                |
| WASHINGTON         | 2,924                       | -23.8                                                    | 115                                                       | 66.7                                                           | -20.3                                                                                                                  | 208.4                                                        | 5.1                                                          | 12.8                                                                                   | 13.1                                                                                                                               |

**Appendix Table E.—Persons Employed in Manufacturing, Percent  
of Total and Percentage Change, 1940-1950, Economic  
Areas and Counties, Ohio**

| Area and County | Employed Workers in Manufacturing |                     |                                |
|-----------------|-----------------------------------|---------------------|--------------------------------|
|                 | 1950                              | Percent<br>of total | Percentage<br>change 1940-1950 |
| Ohio            | 1,121,006                         | 100.0               | 43.0                           |
| Area 1, A       | 91,833                            | 8.2                 | 57.4                           |
| Defiance        | 2,715                             | 0.2                 | 47.2                           |
| Fulton          | 2,284                             | 0.2                 | 122.0                          |
| Henry           | 1,233                             | 0.1                 | 159.6                          |
| Lucas—A         | 61,222                            | 5.5                 | 45.0                           |
| Ottawa          | 3,613                             | 0.3                 | 85.8                           |
| Paulding        | 1,195                             | 0.1                 | 316.4                          |
| Putnam          | 1,846                             | 0.2                 | 303.1                          |
| Sandusky        | 6,710                             | 0.6                 | 64.3                           |
| Van Wert        | 2,950                             | 0.3                 | 115.2                          |
| Williams        | 2,367                             | 0.2                 | 43.8                           |
| Wood            | 5,698                             | 0.5                 | 74.7                           |
| Area 2          | 45,582                            | 4.1                 | 52.6                           |
| Allen           | 10,459                            | 0.9                 | 49.7                           |
| Auglaize        | 3,890                             | 0.3                 | 62.6                           |
| Crawford        | 4,867                             | 0.4                 | 36.5                           |
| Hancock         | 5,116                             | 0.5                 | 56.8                           |
| Hardin          | 1,767                             | 0.2                 | 127.1                          |
| Logan           | 1,791                             | 0.2                 | 104.9                          |
| Marion          | 4,965                             | 0.4                 | 24.7                           |
| Mercer          | 3,292                             | 0.3                 | 82.8                           |
| Seneca          | 6,995                             | 0.6                 | 48.0                           |
| Union           | 1,045                             | 0.1                 | 45.5                           |
| Wyandot         | 1,395                             | 0.1                 | 79.5                           |
| Area 3, B, C, D | 203,306                           | 18.1                | 49.2                           |
| Butler—D        | 26,356                            | 2.4                 | 41.5                           |
| Champaign       | 2,507                             | 0.2                 | 75.2                           |
| Clark           | 16,930                            | 1.5                 | 24.8                           |
| Clinton         | 1,512                             | 0.1                 | 87.6                           |
| Darke           | 3,535                             | 0.3                 | 84.6                           |
| Delaware        | 2,232                             | 0.2                 | 156.3                          |
| Fayette         | 1,307                             | 0.1                 | 59.4                           |
| Franklin—B      | 50,045                            | 4.5                 | 52.6                           |
| Greene—C        | 4,174                             | 0.4                 | 113.1                          |
| Madison         | 1,251                             | 0.1                 | 111.7                          |
| Miami           | 9,121                             | 0.8                 | 31.6                           |
| Montgomery—C    | 70,951                            | 6.3                 | 45.1                           |
| Pickaway        | 1,296                             | 0.1                 | 79.5                           |
| Preble          | 2,832                             | 0.2                 | 162.7                          |
| Shelby          | 3,943                             | 0.4                 | 66.4                           |
| Warren          | 5,314                             | 0.5                 | 80.5                           |
| Area 4a, E      | 290,444                           | 25.9                | 42.1                           |
| Cuyahoga—E      | 236,101                           | 21.1                | 36.5                           |
| Erie            | 8,508                             | 0.8                 | 92.5                           |
| Huron           | 3,687                             | 0.3                 | 92.0                           |
| Lake—E          | 13,550                            | 1.2                 | 111.8                          |
| Lorain          | 28,598                            | 2.5                 | 52.5                           |
| Area 4b         | 34,679                            | 3.1                 | 52.0                           |
| Ashland         | 4,949                             | 0.4                 | 44.1                           |
| Holmes          | 1,009                             | 0.1                 | 158.1                          |

**Appendix Table E.—Persons Employed in Manufacturing, Percent  
of Total and Percentage Change, 1940-1950, Economic  
Areas and Counties, Ohio—Continued**

| Area and County | Employed Workers in Manufacturing |                     |                                |
|-----------------|-----------------------------------|---------------------|--------------------------------|
|                 | 1950                              | Percent<br>of total | Percentage<br>change 1940-1950 |
| Medina          | 5,600                             | 0.5                 | 54.1                           |
| Richland        | 16,421                            | 1.5                 | 42.2                           |
| Wayne           | 6,700                             | 0.6                 | 76.2                           |
| Area 5, F, G, H | 246,687                           | 22.1                | 42.0                           |
| Ashtabula       | 8,588                             | 0.8                 | 127.6                          |
| Columbiana      | 17,658                            | 1.6                 | 43.5                           |
| Geauga          | 3,195                             | 0.3                 | 149.8                          |
| Mahoning—H      | 47,737                            | 4.3                 | 27.1                           |
| Portage         | 8,104                             | 0.7                 | 65.3                           |
| Stark—G         | 50,982                            | 4.5                 | 42.0                           |
| Summit—F        | 77,313                            | 6.9                 | 40.5                           |
| Trumbull—H      | 33,110                            | 3.0                 | 44.3                           |
| Area 6a         | 19,935                            | 1.7                 | 42.5                           |
| Fairfield       | 7,209                             | 0.6                 | 34.6                           |
| Knox            | 4,029                             | 0.4                 | 60.3                           |
| Licking         | 7,053                             | 0.6                 | 31.0                           |
| Morrow          | 1,644                             | 0.1                 | 123.1                          |
| Area 6b, J      | 53,226                            | 4.7                 | 31.6                           |
| Belmont—J       | 7,593                             | 0.7                 | 18.5                           |
| Carroll         | 2,218                             | 0.2                 | 44.2                           |
| Coshocton       | 3,734                             | 0.3                 | 48.0                           |
| Guernsey        | 3,242                             | 0.3                 | 42.0                           |
| Harrison        | 1,109                             | 0.1                 | 51.5                           |
| Jefferson—J     | 13,419                            | 1.2                 | 14.4                           |
| Muskingum       | 10,177                            | 0.9                 | 43.8                           |
| Perry           | 2,332                             | 0.2                 | 40.7                           |
| Tuscarawas      | 9,402                             | 0.8                 | 44.4                           |
| Area 7, K       | 109,608                           | 9.9                 | 27.8                           |
| Adams           | 578                               | 0.1                 | 43.1                           |
| Brown           | 1,253                             | 0.1                 | 91.0                           |
| Clermont        | 4,375                             | 0.4                 | 75.8                           |
| Hamilton—K      | 97,263                            | 8.7                 | 25.5                           |
| Highland        | 1,849                             | 0.2                 | 40.5                           |
| Ross            | 4,290                             | 0.4                 | 26.2                           |
| Area 8a, L      | 19,521                            | 1.7                 | 37.5                           |
| Gallia          | 367                               | 0.0                 | 45.1                           |
| Hocking         | 1,762                             | 0.2                 | 24.3                           |
| Jackson         | 2,151                             | 0.2                 | 48.8                           |
| Lawrence—L      | 4,545                             | 0.4                 | 85.4                           |
| Pike            | 612                               | 0.0                 | 104.7                          |
| Scioto          | 9,450                             | 0.8                 | 17.3                           |
| Vinton          | 634                               | 0.1                 | 133.1                          |
| Area 8b         | 6,185                             | 0.5                 | 56.2                           |
| Athens          | 1,464                             | 0.1                 | 38.4                           |
| Meigs           | 537                               | 0.1                 | 23.7                           |
| Monroe          | 373                               | 0.0                 | 57.4                           |
| Morgan          | 488                               | 0.0                 | 76.2                           |
| Noble           | 307                               | 0.0                 | 96.8                           |
| Washington      | 3,016                             | 0.3                 | 67.8                           |

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